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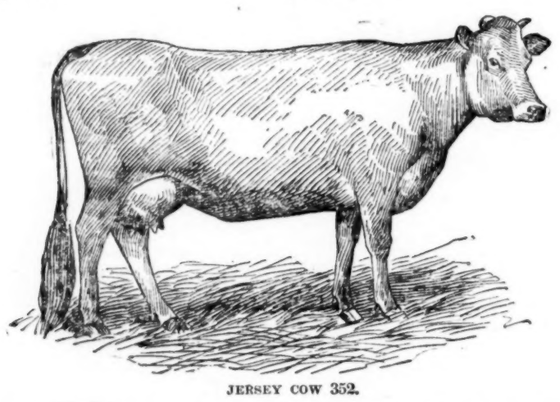
FEEDING DAIRY COWS.

Results of Some Experiments Conducted by Prof. Jas. Wilson, Director Iowa Station.

Bulletin No. 32, Iowa Experiment Station, gives the details of experiments in feeding dairy cows during the Winter and Spring of 1895, and conducted by Director Jas. Wilson, Jan. 1, 1895. Eight cows were selected from the college herd, which had dropped calves from Sept. 10 to Dec. 7. There were four Holsteins, two Shorthorns and two Jerseys—not the best of the herd, but selected on account of their condition of lactation, and were fair averages of their breeds.

It was desired to ascertain the quantity and quality of milk, butter and cheese made from turnips, mangels, sugar beets and red table beets; from feeding with roots and without them; from wet and dry fodder, and the effect of feeding bran on pasture. Observations extended over 189 days, including 77 days on roots, 46 days without roots, and 66 days observations on pasture, with and without bran. There was a uniform foundation ration of hay, cornfodder, bran, gluten meal, and oil meal fed during the first two periods until the cows went to grass. This foundation ration is well known to make good dairy products.



JERSEY COW 352.

During the 77 days when roots were fed, 10 preliminary and 10 test days were with strap leaf purple top turnips; 10 preliminary and 10 test days with mangel wurzels; 10 preliminary and 10 test days with sugar beets, and eight preliminary and nine test days with red table beets.

During the turnip period the roots were gradually increased over a 10 day preliminary period until each cow had 20 pounds daily, 10 pounds of corn fodder, two pounds of oil meal, two pounds of gluten meal, 10 pounds of bran and 4.5 pounds of hay. When a change was made from one root to another it was done gradually, over five days decreasing the one and increasing the other, so that the cows would be five days on the tested root at the beginning of the 10 day test period. The cow will be beyond the influence of a root in five days as far as it affects the flavor of the milk and the butter made from it.

The ration was mixed 12 hours before feeding and wetted, so that it would be more easily masticated, a gentle heat was generated and palatability increased; when we wetted the ration longer than 12 hours palatability was injured. The corn fodder was cut and eaten as closely as cut fodder siloed.

Toward the close of the turnip test period the two Jersey cows refused their quota of the ration, and were fed just what they would eat up clean. The turnips produced 24 tons, trimmed product, to the acre.

The turnips produced 2,333 pounds of milk, with 91.19 pounds of butter fat, but the cows lost 60 pounds in weight.

The mangels produced 2,401 pounds of milk, with 88.26 pounds of butter fat, but the cows gained 110 pounds in weight, instead of losing 60 pounds, as in the turnip period.

Sugar beets were next fed. The milk decreased to 2,336 pounds, and the butter fat to 85.11 pounds. The sugar beet has a wider nutritive ratio than any of the other roots, its carbonaceous matter being purposely developed for sugar making. The cows lost 35 pounds in weight during the preliminary period and five pounds during the test period. It required 23.83 pounds of dry matter to make a pound of butter fat. We tested sugar beets for the reason that Iowa is well adapted to growing them. This station has grown 20 tons to the acre uniformly under conditions necessary to get the greatest per cent of sugar, which requires the size being limited to two pounds, root parts grown beneath the surface. We would not advise the growing of sugar beets in preference to mangels, but in future agricultural operations in the State it may be useful to have indications of their value for dairy purposes. With our abundance of carbonaceous crops the pulp would be nearly as valuable for dairy cows after extracting the sugar. Sugar beets are, however, very palatable, and we think grateful to the system of the dairy cow.

Red table beets were tested for 17 days. Reduced to a 10 days' equivalent there were 2,033 pounds of milk, and 80.67 pounds of butter fat produced, a considerable falling off from the sugar beets, but the cows gained 136 pounds in nine days.

Each cow had from 108 to 121 pounds of water per day. The temperature of the water varied from 36° to 49°. That of the barn did not fall below 36° during the Winter nor rise above 60°.

The yield of butter is found by adding one-sixth to the amount of butter fat. This gives the following results:

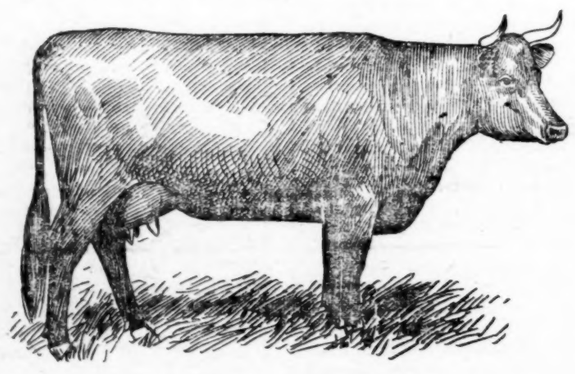
	Lbs. fat.	Lbs. butter.	Per cow daily.
From turnips	91.19	106.38	1.32
From mangels	88.26	102 97	1.28
From sugar beets	85.11	99 29	1.24
From red table beets	72.61	84.71	1.17

This is an average of 1.25 pounds of butter a day for each cow for the 77 days of the four root periods. The decline is gradual and may be attributed to the advance in the periods of lactation, the most marked variation being on the weight of the cows. The red table beets fed last produced more weight on the cows than any of the other roots.

The study of weight showed that there is as marked individuality among representatives of the same breed as there is contrast between the breeds. Of the four Holsteins one lost 20 pounds, while three gained 186 pounds. Of the two Shorthorns, one gained 70 pounds, and the other 20 pounds. This fact is suggestive to the farmer, who may select toward the results he desires.

The rations caused neither gain nor loss on either of the two Jerseys. Their weight remained stationary on turnips and mangels; they lost slightly on sugar beets, and made it up on red table beets. The two Shorthorns gained 20 pounds on turnips and 50 on mangels, and lost 50 on sugar beets. They gained 70 pounds on red table beets, making a gain in weight of 90 pounds in 77 days.

The Shorthorns fatten easily. In this case they were fed liberally and made only such gains as are desirable to prepare cows for good results in Summer on pasture.



SHORT HORN COW 209.

The State has more of this blood in its dairy herds than any other, and where fattening rations are fed, disappointment too often follows.

The other four cows are Holsteins. They lost 10 pounds on turnips and gained 40 on mangels. They gained 40 pounds on sugar beets, being the only breed that gained on this root; and they gained 96 pounds on red table beets. They gained 166 pounds during the 77 days, which is 41.5 pounds each, to 45 each for the Shorthorns, but one of the Holsteins lost 20 pounds, making the gain of three Holsteins 186 pounds, or 62 pounds each, which is not seriously objectionable.

The difference in butter production between the breeds is very little, looking at the product. The cost of a pound of butter depends upon the feed consumed. Comparing the two Shorthorn with the two Jerseys, it will be seen that the Shorthorn ate 3,800 pounds of dry matter, while the Jerseys ate 3,291 pounds. Both breeds were fed up to their limit. The Shorthorns ate most oil meal, fodder and bran, which made a slightly wider nutritive ratio for the Jerseys, that consumed as much hay, the Shorthorns' ratio being 1:4.4, while that of the Jerseys was 1:4.6. During the same time the Shorthorns gained 90 pounds in weight, while the Jerseys made no gain whatever. A comparison of the Jerseys with the Holsteins will show very nearly the same contrast. The Holsteins gained 166 pounds for four head, which is nearly the same average per cow as the gains of the Shorthorns. We have, then, 509 pounds of dry matter eaten by the Shorthorns more than was eaten by the Jerseys; against the 90 pounds of weight made by the Shorthorns. But 509 pounds of dry matter fed to the Jerseys made 24 pounds of butter fat, which at 10.4 cents a pound, the cost of fat by the Jerseys, is $2.50, against the 90 pounds of grain made by the Shorthorns.

This presents to us the special and general purpose breeds. It is evident that whoever wants his product in milk would favor the one, and whoever desires fattening tendencies would favor the other.

The value of the dairy cow with no disposition to fatten is apparent when the ration used was more nitrogenous than is usually fed in the corn belt, and that wider rations with corn as a prominent feature would induce still more to fattening. Corn was not fed in this experiment, owing to the scarcity and hight price. Easy fattening is an element of value where the dairy cow is to be put in good condition during the Winter for good work on grass during the Summer, or when she is bought for service in the dairy for one season only, to be turned over to the butcher instead of being held over a dry interval, or where calves for feeding are desirable; but where none of these objects are in view, the tendency to gain considerable weight during the period of lactation is not valuable and not desirable, and may be decidedly objectionable.

COST OF BUTTER FAT.

The cost of a pound of butter from the Shorthorns—not estimating the gain in weight—was 12.7 cents; from the Jerseys 10.4; and from the Holsteins 12.9 cents.

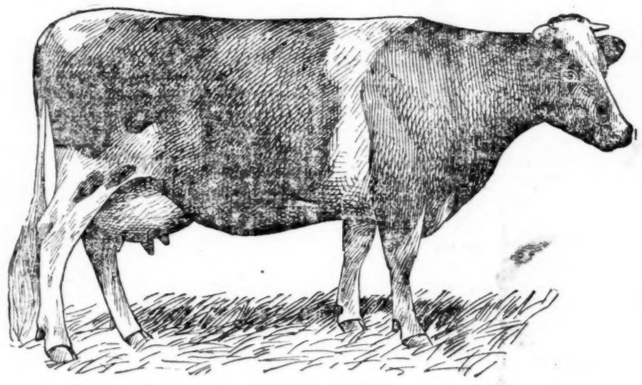
The following prices are used in finding the cost of a pound of butter fat:

Fodder	20	cents	per	cwt.
Bran	70	"	"	"
Gluten meal . . .	75	"	"	"
Oil meal (old process)	$1.25	"	"	"
Roots	05	"	"	"
Hay	35	"	"	"

The cut is Jersey cow 352, (Nicolette 65,992, A. J. C. C.) used in this experiment.

She gave an average of 18 pounds of milk per day during 77 days, the average test of which was 6.93 per cent. fat. Her milk varied during the four root periods from 19.9 pounds a day with 6.60 per cent. fat in the turnip test 10 days, to 17 pounds a day with 7.35 per cent. fat in the red beet period. Her record name is Nicolette, 65992 A. J. C. C. Her dam came from Mr. Richardson of Davenport. Her milk has tested 7.8 per cent. fat. She is a typical Jersey, weighing 760 pounds at the beginning of the experiment, and made no gain in weight while being fed to her limit of capacity.

The cut is Shorthorn cow 209 (Belle of Squaw Creek, A. S. H. H. B. Vol. 36) used in this experiment.



HOLSTEIN COW 703.

She gave an average of 31.4 pounds of milk a day for 77 days, with an average of 3.71 per cent. of butter fat. Her yield varied from 33.5 pounds of milk daily with 3.80 per cent. fat in the turnip 10 days' test period, to 27.7 in the red beet period with 3.80 per cent. fat; the per cent. fell to 3.60 in the mangel period and was 3.65 in the sugar beet period. During the 77 days she gained 70 pounds in weight. She weighed 1230 pounds when the experiment begun. She is a typical milking Shorthorn. Her dam has figured in our bulletins as cow 244, a heavy milker that fattened easily to 1400 pounds. The family has been on the college farm several generations, and have been used as dairy cows. Her calves would make show cattle if fed for that purpose. She would lay on fat rapidly on a corn ration, of wider nutritive ratio.

The cut is Holstein cow 703 (Princess of Black Hawk 39385 H. F. A. A.) used in this experiment.

She gave an average of 39.2 pounds of milk, of 3.45 average per cent. of butter fat, during the 77 days of root feeding. Her milk varied from 3.70 per cent. of fat in the turnip period to 3.30 in the sugar beet period. She gained 40 pounds in weight in the 77 days. The table shows her butter fat daily to be 1.36 pounds, or 1.58 pounds of butter. The Jersey has a daily average of 1.27 pounds of butter fat or 1.48 pounds of butter; but the Holstein ate 314 pounds of dry matter more than the Jersey, which makes the Jersey's butter the cheaper. The Shorthorn has a credit of 1.15 pounds of butter fat, or 1.34 pounds of butter. The three cows are fair averages of the college herd, neither the heaviest milkers nor the lightest of the breeds to which they belong.

Composting Manure.

The question whether it pays to compost manure rather than haul it as fast as made directly upon the field where it is to be used, must always depend on circumstances. On the farm it is counted good practice to haul out the manure as top dressing for clover grass or for grain that is to be seeded with clover in the Spring. There is little or nothing of value washed away from manure on land seeded with grass or clover. The roots take it up whenever the grass or clover is growing, and by being drawn out early the rains carry it down and mix it more throughly with the soil. When warm weather comes the manure ferments, warming the soil and developing ammonia. But the market gardener almost invariably composts manure before using it. The gardener has only naked soil on which to apply unfermented manure. When heavy rains come some of this manure will be leached away and lost. Scattered in the soil the manure does not begin to ferment until too late in the season to do much good to garden crops. In fact, if it only begins to ferment in Midsummer, the coarse manure may only dry the soil and do harm rather than good. Whenever farmers want to give an early start to vegetation they should compost the manure. It can be rotted down long before the weather is warm enough for any thing to grow, and then be applied in time for Spring rains to wash the manure into the soil. For grain crops that are seeded with clover composted manure will pay if applied late in the Winter. The composted manure can be spread so much more evenly that its smaller bulk will cover a larger surface, and do more good than the same manure as it is drawn from the stable and unfermented.

GREEN MANURING.

The Best Method of Restoring Worn-out Soils.

BY DR. S. W. ALLEN,
Director of the Office of Experiment Stations, Agricultural Department, Washington, D. C.

[Address before the New York Farmers' Club.]

Green manuring, or plowing under green crops raised for that purpose, is one of the oldest means of maintaining or improving the fertility of the soil. It was advocated by Roman writers more than 2,000 years ago, and from that time until now it has formed a most important resource of the farmer, especially where the supply of barnyard manure is insufficient. Its advantages are many. The more striking are that it furnishes the surface soil with a supply of the fertilizing materials needed by crops, increases the humus, and improves the physical qualities and the tilth of the soil. As a humus former, green manuring stands next to barnyard manure.

A noteworthy instance of the renovation of old soils by green manures is that of Schulz-Lupitz, in north Germany. In the middle of the present century Schulz came into possession of the estate of Lupitz, which was run down to such an extent that scarcely anything could be raised. The soil was a sandy one, and did not respond to commercial fertilizers. But he found it was able to grow luxuriant crops of lupine. A system of green manuring, with lupine alternated with pasturing the crop to sheep, was inaugurated, and the estate was gradually brought into a condition for the profitable growing of mixed crops. At the end of 15 years, although no fertilizer, except a little kanit, had been applied, the soil was by analysis over twice as rich in available plant food as that of two neighboring estates in a high condition of fertility, which had received large dressings of barnyard manure. His success has given rise to what is known as the Schulz-Lupitz system, in which green manures very largely supply the fertilizing materials needed to keep up the fertility. By its means large tracts of practically waste land have been brought under profitable cultivation.

WHITE LUPINE (Hight 33 inches.)

At the celebrated Rothamsted estate, in England, where experiments in agriculture have been carried out for over 50 years, wheat was grown in rotation with beans for 16 years, the bean crop being turned under. On an adjoining field wheat was grown every year. The treatment was otherwise the same. It was found that the eight crops of wheat (grown in rotation with the green manuring crop) yielded practically as much wheat as the 16 crops of wheat grown consecutively on the adjoining field, and the land in the former case was in much the better condition.

In our own country some very striking examples have been furnished by the work of the Agricultural Experiment Stations. In Alabama the Station tried green manuring with cowpeas and melilotus on a tract of canebrake soil, which was practically barren and not considered worth cultivating. In a few years it produced crops equal to any of the Station's land highly fertilized.

Another instance is that of the light, sandy, almost barren land of Michigan, known as the jack-pine plains, from the scrubby jack-pine, which is its only vegetation. Experiments were undertaken by the Michigan station using green manures mainly, supplemented by cheap fertilizers.

Mr. Sturgis: What were the "green manures"?

Dr. Allen: They were largely lupines. The lupine belongs to the pine family. The lupines are a very familiar plant on sandy soil.

Mr. Sturgis: Is it a species of pea?

Dr. Allen: It belongs to the same class as the peas.

Mr. Dodge: Does it look like a large violet?

Dr. Allen: Yes, the bloom does.

Mr. Dodge: It occurs on the Jamaica Plains, Long Island.

Dr. Allen: It occurs on a sandy soil where hardly anything else will thrive.

In three years marked improvement was evident, not only in the physical character of the soil, but also in the increased yields of various crops.

BLUE LUPINE (Hight 38 inches.)

These few examples serve to emphasize the possibilities of green manuring. Besides bringing up worn-out or waste lands, it may be made to take the place of more expensive fertilizers and manures on soils already under cultivation. It is in this latter use that it finds its widest application.

HOW THEY DO IT.

But how do the green-manuring crops gather such large quantities of fertilizing materials as to actually enrich the soil? It has been said that plants with long roots, like clovers, feed deep down in the soil or subsoil on materials beyond reach of surface-feeding plants, and that in this way they bring up the reserve materials from below. This is undoubtedly true, but it does not explain how such large quantities of materials can be obtained year after year. The question has finally been answered by one of the most interesting and important discoveries yet made in agricultural science; and, by the way, a large share of the credit for this important discovery belongs to one of our Agricultural Experiment Stations. It has been found that certain plants can feed upon the nitrogen in the atmosphere and store it up in their tissues as they grow. It will be remembered that the principal fertilizing ingredients required by plants are nitrogen, phosphoric acid, and potash, and that most plants depend for these exclusively upon the soil. It is now known that certain kinds of plants, which have always been prominent green-manuring crops, can obtain their nitrogen very largely from the air. They continue to take their phosphoric acid and potash from the soil, but they draw from the air a material which, in the form of commercial fertilizers, as nitrate of soda, ammonium sulphate, dried blood, etc., costs from 15 to 20 cents a pound.

ALFALFA.

Now, as to the way in which this is brought about a word may not be without interest. In this age of microbes and bacteria, when the words are popularly associated with disease, decay, and a generally undesirable condition of affairs, it is encouraging to learn that in some instances their good offices are apparent. It appears to be through the agency of these lower organisms that this assimilation of nitrogen from the air is accomplished. These organisms live in the soil, and produce or cause the plant to produce little nodules or tubercles on the roots. It is through these tubercles that the plant gets its atmospheric nitrogen. The air enters the soil through the numerous pores or openings in it, and the nitrogen is absorbed or assimilated as a result of the life of the bacteria and made available to the plant.

It has been found that this faculty of using the nitrogen of the air is confined to the so-called leguminous plants—as clovers, peas, beans, lupines, vetches, etc. These facts throw a new light on green manuring, and on the plants best adapted for green manuring. They recommend it more highly than ever before as a soil-renovator and a cheap means of maintaining the fertility of the soil.

If spurry, buckwheat, mustard, etc., which are non-nitrogenous plants, are grown on the soil, and the crop plowed in, the soil is not materially enriched in nitrogen; the process is simply returning to the soil all the nitrogen and other ingredients which the crop took from it. But by green manuring with leguminous crops it is possible to manure the soil with nitrogen from the air, a free and inexhaustible source, and thus avoid buying fertilizers containing much nitrogen. Although grains, grasses, corn, cotton, root crops, tobacco, etc., cannot use the nitrogen of the air directly, green manuring places it at the disposal of these crops. On a rough average, an acre of leguminous crops contains in the part above ground fertilizing materials equal to from four to six tons of barnyard manure. Aside from this, the roots and stubble of the crop add materially to the supply of plant food. These roots penetrate the soil to a depth of 3, 6, 10, and even 15 feet.

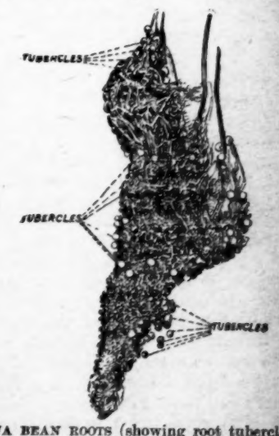
To secure the best result, the green-manuring crop should be given a dressing of potash and phosphoric acid, and a little nitrogen, to give it a start. This gives a luxuriant growth of green material, which should be plowed under usually about blooming-time, before the stalks get too woody.

SOJA BEAN.

SOME CROPS FOR GREEN MANURING.

Among the leguminous plants more commonly used for green manuring in this country and in Europe are cowpea, alfalfa, clovers, melilotus, serradella, lupines, vetch, horse bean, and soja bean. For northern United States, Canada field peas, hairy vetch, lupines, and soja bean are especially adapted. These all produce a vigorous, luxuriant growth of green material, which covers the ground and prevents the drying out of the soil in dry times; all except the vetch requiring planting each season. The vetch will live a number of years if it does not winter-kill. The vetch, lupines and soja bean grow best on light soil to medium soil, the vetch especially withstanding drought well. The Canada field peas grow best on a clay loam soil, but will grow on a stiff clay. The peas are sown broadcast and harrowed in, or are drilled in with a seed drill. For free manuring they are plowed under when in bloom. A frequent practice is to sow rye in the Fall, turn it under in the Spring when the heads begin to appear, and then sow the peas immediately. Canadian peas should be turned under along in August, usually, that being probably the best time.

The vetch is believed to be one of the best plants adapted for green manuring here. It produces a very luxuriant crop, frequently from two to three feet high, and grows on a soil only mediumly rich and withstands the drought excellently. An estimate is made that a crop of the



SOJA BEAN ROOTS (showing root tubercles.)

(Continued on second page)

Stable Talk.

Give the teams a change of food occasionally.

You can always find a ready sale for really good horses.

The first essential to profitable stock raising is a good animal.

If a horse eats too fast, scatter his grain over a larger surface.

It is easier to keep a team in good condition than to make it so.

A good grooming is as refreshing to a horse as a good bath to a man.

It is easier to keep the teams in a good condition than to make them so.

A little wheat bran and oil meal can take the place of oats and corn once a week.

With colts, as with other stock, liberal feeding and good care will produce liberal returns.

The farmer who has the care of young colts should make up his mind not to let them lose a pound of flesh at weaning time. The colt should pass his first Winter in the best of condition, and without a hitch in his growth.

The Montana Experiment Station has spayed a large number of mares, and finds it quite a simple and safe operation. The spayed mares are more tractable, keep in better condition than other mares, and are equal to geldings in form, courage, and endurance.

Prof. Roberts, of Cornell University, found that horse manure piled up loosely for four or five months lost half of its manurial value, while cow manure under the same conditions suffered to the extent of 43 per cent. The inference is that manure should be applied to the land as soon as possible. But with a mixture of the two kinds of manure and a fair amount of bedding the loss in a barn cellar need not be great from Autumn to Spring.

Offensive Breath in a Horse.

This may be the result of imperfect digestion, or due to disorder of the lungs, or to decayed teeth. The cause is to be investigated and the proper treatment for the special case applied under the advice of a veterinary. If the digestion is imperfect, a dose of a pint of raw linseed oil, repeated twice afterward at intervals of two days, and followed by tonics, of which one of the best is a mixture of equal parts of ground gentian, ginger, and sulphate of iron, given daily in a bran mash. One full teaspoonful is the dose. This will probably afford quick relief. If the teeth are at fault, these should be attended to by a veterinary.

Pen Notes.

A boar ought not to be used for service until he is fully eight months old, and only then when a steady growth has been kept up, as when this is done a boar at eight months old will be fairly well matured.

The question now is, At what age is it most profitable to sell our hogs? It has been proven time and again that the younger the pig is the more he makes out of feed consumed; that each day added to his life increases the cost of pork made. Hence it follows that the sooner he can be made to reach 150 to 200 pounds the cheaper it will be done.

Prof. Henry, of the Wisconsin Experiment Station, finds that cabbages have a good deal of value—more than potatoes or turnips—as a swine feed, especially in the first part of the fattening period. The cabbage is largely used in England for feeding both hogs and sheep. It is found to be an excellent addition to a grain ration, as it aids digestion and prevents "cloying" when grain is being fed heavily.

To raise hogs successfully in the corn States a pasture is indispensable. In Europe and in the Eastern States, where only a few hogs are kept upon a farm, confinement to a small yard or pen is the rule. But in the West, where the raising of swine is the leading industry and the main reliance of the great majority of successful farmers, a yard or pen proves utterly inadequate to insure the best results in hog raising for profit. When hogs are confined to small quarters it requires a vast amount of labor to secure cleanliness, and no food can be obtained except what passes through the hands of the feeder.

First Few Days of the Pig.

During the first few days the pigs should be confined to the farrowing pen or, at most, allowed to run in a small, dry lot. They will do better to be confined to the lot until they are at least three weeks old. Just as soon as the pigs show a disposition to eat they should be encouraged in so doing. A small place should be cut off from the lot, so as to allow the pigs, but not the mother, to enter, and in this little lot should be a shallow feed trough. If the pigs are getting plenty of milk from their mother, as they will, provided she is a good brood sow, there is nothing better for them than soaked grain. Dry, hard corn will soon make their teeth sore. An abundance of this soaked grain should be provided, but what is left should be removed at least twice a day and fresh grain put in. If a little sweet skim milk can be given it will add to the growth of the pigs. This may be continued until weaning time, when a decided change in the feed becomes necessary. This is the most critical period of the pig's life, and on his management at this time largely depends his future usefulness. If checked in his growth he will probably not recover soon enough to give the best results, whether kept to grace the breeding herd or to fill the pork barrel.—*Mississippi Experiment Station.*

Fattening Pigs.

From the feeding experiments, which extended over three years, on the fattening of over 100 swine upon grain, the following general conclusions are reached by the Canadian Experiment Station:

(1) On the average 4.38 pounds of grain (barley, rye, peas, wheat, frosted wheat, and wheat bran) was the quantity consumed per pound of increase in the live weight.

(2) In the feeding of grain, considering quantity of feed consumed and the general health of the animals, it is profitable to feed the grain ground and soaked in water for an average period of about 30 hours.

(3) It is profitable to add about three or five pounds of skim milk or buttermilk per head per day to the grain fed to fattening swine.

Yard Echoes.

Oats and bran mixed make a fine grain ration for the growing calf. If there is any skimmed milk to spare, it will help matters wonderfully, even up to six months of age.

In order that cattle may fatten profitably, says Prof. Wrightson, certain conditions must be observed. In the first place, it is important to choose well-bred animals, in which the disposition to lay on fat has been increased by careful breeding. The first prize fat cattle at our great shows are always well bred, and it is mere waste to attempt to fatten ill-bred stock.

Winter Treatment and Diseases of Cows.

During the coming months too much attention cannot be given to the feeding and care of cows. Success in milk or flesh depends very largely upon their Winter treatment. Differences in breed may account to a considerable extent for difference in the quality and yield of milk and readiness of acquiring flesh, but very often food and care will be found to exert a paramount influence. Judicious care and suitable breeds are, of course, essential to the very highest success. But whatever the breed the effect of the right kind of treatment will be both marked and remunerative. Above all, try by judicious treatment to keep them in perfect health, as many dairymen in this country are very much troubled with their cows aborting. When abortion occurs in Winter—December or January—they scarcely ever amount to anything for milk for the coming season. The time is so long before they get to grass and cold weather is so unfavorable that it is found quite difficult to keep them in milk, even in cases where they have carried their young nearly to the usual time. When warm and comfortable stables are provided and plenty of roots with early-cut hay are fed in connection with meal a cow may occasionally be got in milk. But in the majority of cows the experience of farmers here is that it does not pay to milk them. The usual course is to turn the stock as soon as it can be conveniently done, and fill up the herd in the Spring with healthy animals. One great cause of abortion in cows we think is boys, dogs and stanchions. An old dairy farmer in this County, who lived some 35 years on the same farm, and last Spring sold out his farm, stock, hay, etc., says he never kept a dog and always tied his cows with a chain, instead of putting them into stanchions, and he never had a case of abortion among his cows. His observation is that where there are no dogs or stanchions there are few abortions. But what is particularly worthy of observation in this case is the fact that the same cows, still kept on the same farm and fed this Winter principally on old hay instead of that cut last season, the same kind of hay that they have fed on in Winters past, are aborting seriously. The only changes in their management observable is the introduction of stanchions and somewhat less generous feeding.

Such facts, it seems to us, are worth attention. It cannot be denied that stanchions allow less freedom of motion and render lying down and getting up much more difficult than ropes. We have seen cows in the Spring, before calving, unable to rise on the slippery floor without assistance or being released from the stanchions. Besides, they are continually reaching and pushing for their feed, and it is not a strange thing at such times to see a cow's hind feet slip back and the cow fall. This must be very straining across the small of the back.

As to worrying cows with a dog it cannot be too strongly condemned, for it not only affects their disposition and the yield of milk, but renders them liable to all sorts of accidents. Prolapsus uteri, or falling of the womb, is apt to occur among cows not well cared for during the Winter. It is a very dangerous thing, and in most cases, so far as we can learn, terminates fatally under the common modes of treatment which suggests themselves to farmers. If this should happen, first wash the parts with great care and the utmost delicacy of touch, using blood-warm water and a soft sponge. When perfectly clean replace the protruding organ, passing it back gradually until all is returned and pushed well within. Then provide a narrow stall where the cow will be obliged to stand or lie with her head lower than her hind-quarters. Watch her carefully, and if the prolapsus recurs repeat the operation, not neglecting washing with tepid water as described. Then, punching the holes with a sharp awl, take two or three stitches in the vulva with silvered wire the size of bell wire, cutting off the wire for each stitch and uniting the ends by a twist at one side. In case silvered wire cannot be got, strong silk twist may be used, each stitch being tied separately and the thread cut. An opening at the lower end big enough to insert two fingers must be left for the passage of urine. The sewing is not a very painful operation to the cow.

Another great trouble farmers often have with their cows is inflammation of the udder, or garget. In cases where the inflammation is confined to the superficial parts of the udder, as evinced by the uniform swelling of its substance, cold astringent applications have been used with advantage; but on the whole the safest application, and the most successful one, is hot fomentations. This may be applied by means of pledgets of tow placed between the udder and supporting bandage, and kept soaked by pouring hot water over it every 10 or 15 minutes. The most efficient mode, however, is by placing a bucket beneath the udder containing water hotter than the hand can well bear, and applying the water by means of a blanket, thickly folded, and alternately dipped in the bucket and applied against the udder, and maintained by two persons holding the four corners, and placed on the two sides of the animal. The fomentations should be kept up for an hour or more at a time, additions of hot water being made at intervals to keep up the requisite temperature. This should be repeated three or four times a day. On suspending fomentations the udder may be dried and rubbed with the stimulating liniment above mentioned, or in bad cases a large linseed-meal poultice applied, and the addition of a little extract of belladonna to either, will serve materially to mitigate the suffering.—A FARMER, Columbiana County, Ohio.

Pure Milk.

The day is coming, and is probably not far distant, when pure milk will not only be worth more but will command a higher price than milk that has not received proper attention. With the advance of civilization more and more effort is being made to secure such conditions as are requisite for better health, and this effort is not alone confined to giving the best sanitary conditions but to secure pure food. There are comparatively few people who recognize the value of purity in milk, but the subject is being constantly agitated, and it is but a matter of time when the public will know the value of purity in milk, will refuse to buy impure milk, and will pay a higher price for that which is pure.

The time to get ready for the change is now. Take the Baltimore market for example. The status may be surmised from the statement of the State chemist that from over 700 samples of milk analysed only two were clean. Now, we do not believe that Baltimore is any worse than other cities, it only shows at present neither the producer nor the consumer of milk is educated up to the point of pure milk. But this statement of the chemist together with the report of the meeting at which it was given was published in every daily paper in Baltimore, and consequently every intelligent citizen read or had the chance to read of the condition of the milk supply, and the first step has been taken toward educating the public up to a better standard.

Now, who will reap the benefit of the coming change? It will be the man who sees the drift of the times, and turns his attention to supplying the new demand for pure milk, while the man who does not will lose just what his more energetic neighbor gains. This applies alike to dealers and producers.

Shearings.

When the sheep's feet seem to be tender apply a mixture of pure lard or vaseline with one-tenth part of acetate of copper well ground with it. This will destroy whatever poison may affect the feet through the effects of impure matter in the land. Decaying matter of any kind, especially if it is wet, will quickly rot the sole of the feet and cause lameness, which if neglected may have serious results.

William Taylor, of Marysville, Va., has witnesses from his own home and from Lynchburg to testify that on a pond at his place a huge bull frog seized a half-grown duck by the neck, swallowing its head and then choking to death too late to be of service to the duck.

Catarrh

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GREEN MANURING.

(Continued from first page.)

hairy vetch, when plowed under, furnishes to the soil a fertilizing material which would in the market cost from $30 to $45 an acre.

The soja bean is a Japanese importation of very great promise. It thrives well in this latitude and somewhat farther north. It produces an excellent crop when sown broadcast, and has large leaves.

As we go further south the crimson clover and cowpea are the crops most relied upon for green manuring.

HAIRY VETCH.

The *cowpea* is widely used as a green manure in the Southern States. According to the North Carolina Experiment Station, "the cowpea, being a tender annual, should always be sown in the Spring. It will give a good yield sown as late as July 1, but the earlier it is sown after danger of frost is passed the heavier the yield. The pea is usually sown broadcast at the rate of two bushels per acre and plowed or harrowed in. The cowpea is not affected by heat, and is less sensitive to drought than any of the clovers."

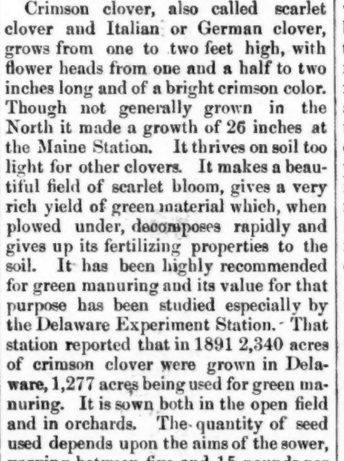
Experiments have shown that cowpeas respond readily to applications of potash and phosphates, and are able to derive their nitrogen very largely from the air. Inasmuch as cowpeas are large gatherers of nitrogen, and also secure considerable amounts of potash and phosphoric acid through their extensive root system, which reaches down to the subsoil, they have a high fertilizing value.

Experiments at the Louisiana Station show that one acre of cowpeas, yielding 3,970.38 pounds of organic matter, turned under, gave to the soil 64.95 pounds of nitrogen, 20.39 pounds of phosphoric acid, and 110.56 pounds of potash, of which at least 8.34 pounds of nitrogen, 4.43 pounds of phosphoric acid, and 18.1 pounds of potash were furnished by the roots.

Cowpea is successfully grown in the North, but it does not reach the degree of luxuriance that it does further south, and seed cannot be matured.

Crimson clover, also called scarlet clover and Italian or German clover, grows from one to two feet high, with flower heads from one and a half to two inches long and of a bright crimson color. Though not generally grown in the North it made a growth of 26 inches at the Maine Station. It thrives on soil too light for other clovers. It makes a beautiful field of scarlet bloom, gives a very rich yield of green material which, when plowed under, decomposes rapidly and gives up its fertilizing properties to the soil. It has been highly recommended for green manuring and its value for that purpose has been studied especially by the Delaware Experiment Station. That station reported that in 1891 2,340 acres of crimson clover were grown in Delaware, 1,277 acres being used for green manuring. It is sown both in the open field and in orchards. The quantity of seed used depends upon the aims of the sower, varying between five and 15 pounds per acre. It is also sown among corn, and with a broadcasting machine four acres per hour can be seeded. It may be grown either as a Winter crop, covering the soil during September, October and November, or as a Summer crop. As a Winter crop it may either precede or follow the Southern cowpea vine. In Delaware a very large acreage of field corn is sown to crimson clover immediately after the cultivation of the corn is finished for the season.

In Delaware crimson clover can be cut for hay or for silage early in May. In the South it blooms in April. A yield



CRIMSON CLOVER.

of from one to two tons of excellent hay may be secured from very thin land. The hay is taken off in time to allow the use of the field for other Summer crops. Crimson clover leaves the land in good condition for a crop of cotton, corn or vegetables. It has been found an excellent substitute for nitrate of soda in growing sweet potatoes in Delaware.

At the Delaware Experiment Station crimson clover yielded at the rate of 13 tons 566 pounds of green material per acre (exclusive of roots and stubble), containing 131 pounds of potash, 35 pounds of phosphoric acid and 115 pounds of nitrogen. As a source of nitrogen for fruits, field crops and vegetables it has given highly satisfactory results, in some cases surpassing nitrate of soda.

Alfalfa, or lucern, as it is frequently called, is grown extensively farther west, but has not succeeded so well in the East, though the New Jersey Station had good success with it as a green manuring crop.

The value of alfalfa for green manuring has been quite thoroughly studied by the New Jersey Experiment Station. Seed was sown broadcast at the rate of 15 pounds per acre. A fertilizer containing phosphoric acid and potash with a little nitrogen was applied. It appears from these studies that alfalfa derives nitrogen from some other source than the soil, and draws potash through its long roots from the deeper layers of the subsoil. In three years 90 pounds of nitrogen per acre was applied in the fertilizer, and the crops harvested in that time contained 912.8 pounds of nitrogen per acre.

OTHER MANURING NECESSARY.

The subject of the discussion for this evening, "Green Manuring Only," suggests the substitution of green manuring for other fertilizers or manures. This is irrational, for two reasons. Without dressings of potash and phosphoric acid the soil soon becomes impoverished in these materials, although it remains rich in humus. Green manuring enriches the surface soil with these materials drawn from the depths of the soil, but it does not add to the supply in the soil, as in the case of the nitrogen. The crops following gradually exhaust the soil of its supply of potash and phosphoric acid, and some of them do this very rapidly. So that green manuring alone cannot be relied upon to maintain the fertility of the soil.

In the second place, green manuring is wasteful. It invoives the absolute

JAPAN CLOVER.

waste of large quantities of the very best kind of fodder. It turns back to the soil substances which do not materially benefit the soil, but which are food for animals. By feeding the crop this animal food is saved, and at the same time from three-quarters to nine-tenths of the fertilizing materials (nitrogen, phosphoric acid, and potash) in the crop may be returned to the soil in the manure, if this is properly cared for. Animals need for their nutrition nitrogen, fat, and carbohydrates (starch, sugar, etc.). These are all contained in the green manuring crops, especially the nitrogen. This nitrogen is food for both plants and animals, and in both cases is the most expensive food the farmer has to buy. In the form of nitrogenous fertilizers it costs at least from 15 to 20 cents a pound. In the form of protein, as oil cake and the refuse from bi-products, and from factories, it costs from 20 to 25 cents a pound. The fat, starch, sugar, etc., do not benefit the soil especially, but are essential as animal food. Hence, by feeding leguminous crops, instead of plowing them under, a twofold result is secured. Animals are nourished without buying expensive grain feeds, and the soil is enriched to very nearly the same extent as in green manuring.

Beyond question, the nitrogen of the air, obtained through the agency of leguminous plants, is best utilized in improving the productiveness of the land and increasing the profits of the farm when it is used in the production of milk, meat, and barnyard manure. This is the true economy of material. It is following out the law of nature.

In a rational system of farming not a single pound of nitrogen (protein) which can be used as food for stock should be plowed into the soil. Of course, there are conditions under which green manuring is to be recommended in preference to feeding the crop, as in the case of very poor soils which it is desired to renovate, and, again, where the barnyard manure is not properly cared for. Unless the manure is carefully collected and preserved the advantages from feeding disappear to a large extent. In some sections of the country, even, where manures are at present necessary, a large proportion of the fertilizing and humus-forming ingredients is lost either through leaching, surface-washing, or fermentation and decay. The farmer who permits this waste, whether through ignorance or carelessness, is sure to feel the loss either in diminished crops or in increased bills for fertilizers. The barnyard manure should be as scrupulously cared for as any other farm product.

Now a word as to the value of leguminous crops for feeding. Why should the farmer continue to raise meadow hay as his main supply of coarse fodder, and buy grain to supplement it, when by growing leguminous crops the nitrogen required by animals can be produced at the lowest cost? The crops of red clover, crimson clover, Japan clover (*Lespedeza*), cowpea, alfalfa, soja bean, horse bean, serradella, and many others of this class, far surpass common hay in the food materials they contain, both pound for pound and in yield per acre. They may be grown as catch crops and used for soiling or pasturage, or they may be grown for making hay or silage. By mixing the green crops with corn and ensiling the two together a palatable and nutritious food is produced which is much richer in nitrogen than silage made from corn alone. Probably the best way to use the crop is for soiling or ensiling. If the crops are allowed to mature, the seeds are exceedingly rich as a feeding stuff, equalling in that respect the more concentrated commercial feeds. For instance, a recent experiment has indicated that soja-bean meal is fully equal to cotton-seed meal for milk and butter production. This meal is one of the richest feeding stuffs we have. It exceeds linseed meal and gluten meal in protein (nitrogen) and far exceeds these and cotton-seed meal in fat. The beans can be thrashed out and ground, and the straw fed as coarse fodder. This straw is richer in food material than a good meadow hay. The cowpea may be treated in a similar manner. The ground cowpeas are a richly nitrogenous feed, although not as rich as soja-bean meal; and the vines are nearly or quite equal to clover hay, and far surpass grass hay in richness. As the vines of the mature plant are rather coarse and woody, they are best utilized when ensiled with corn to make them soft and succulent.

In conclusion, it may be said that for renovating worn or barren soils, and for maintaining the fertility where the barnyard manure is not properly cared for, green manuring with clovers, lupines, peas, etc., is recommended. A dressing of potash and phosphates will usually be sufficient for the green manuring crops.

But the practice of green manuring on medium and better classes of soils is irrational and wasteful. The crop is best utilized when it is fed out on the farm and the manure saved and applied to the soil. The greatest profit is thus secured, and nearly the same fertility is maintained as in green manuring.

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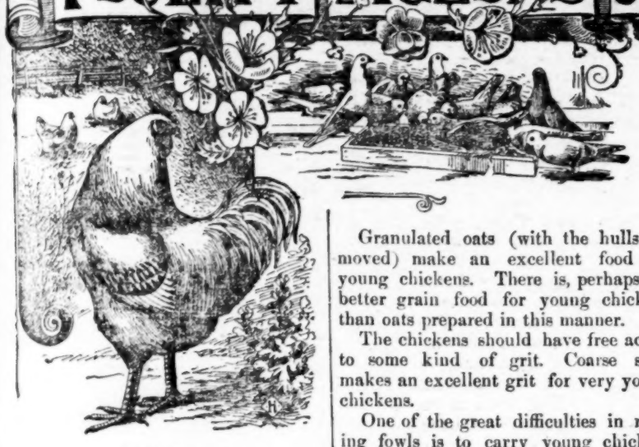


Cacklings.

Plenty of exercise is a better stimulent for egg production than drugs.

Poultry manure is a excellent fertilizer. Gather it on rainy days and store in a dry place.

You cannot grow eggs and lice with the same fowl. The latter will soon kill the chances of the former.

The secret of feeding is to avoid getting the laying hens fat. Always keep them at work; a lazy hen is never a good layer.

The essential requisites of a poultry-house at this season are dryness, warmth and light. Never mind about ventilation—that will take care of itself during cold weather.

Dry-picked fowls bring a little more per pound than those that are scalded. To dry pick to the best advantage the work should be done as soon as possible after the fowls are killed. If allowed to become cool, the task is not only tedious but often proves unsatisfactory.

One of the best uses for wheat chaff is to mix it with the same quantity of straw and use it on the floor of the poultry house. It may be three to six inches thick, and serve several purposes, the first being to keep the floor always dry and clean, and the next is that if grain be scattered in the chaff the hens will work and search industriously for the seed. Where wheat is grown, the chaff is the cheapest substance that can be used, and in the Winter it will serve to keep the fowls warm by shutting off drafts of cold air along the floor.

FOWLS: CARE AND FEEDING.

Practical Ideas for Successful Poultry Raising.

(Continued from last month.)

GRIT.

It is necessary that fowls have access to some kind of grit if grain food is fed in any considerable quantities. During the Summer months, when they have free access to the yards or runs, it will not be necessary to provide grit, providing the soil is at all gravelly. If, on the other hand, the soil is fine sand or clay, it will be necessary not only to provide grit during the Winter months, but throughout the whole year.

Small pieces of crushed stone, flint, or crockery ware will answer the purpose admirably. There are many poultry-supply houses which keep constantly on hand crushed granite in various sizes suitable for all kinds of domesticated fowls.

Crushed oyster shells, to a large extent, will supply the necessary material for grinding their food, and at the same time furnish lime for the egg-shells. Chemical analysis and experiments, together with the reports from many practical poultrymen, show conclusively that the ordinary grain and the green food supplied to laying hens do not contain enough lime for the formation of egg-shells. It will require several times as much lime as is ordinarily fed if good, strong egg-shells are to be produced. Crushed oyster-shells will supply this necessary lime if kept continually before the fowls, trusting to them to eat the amount needed to supply lime, rather than mixing the shells with food. The judgment of the fowl can be relied upon in this respect.

MEAT FOOD.

Where fowls are kept in confinement it will be necessary to supply some meat food. Finely-cut fresh bone from the meat markets is one of the best if not the best kind of meat food for laying hens and young chickens. Unfortunately, it is not practicable for many poultrymen to depend wholly on this product, for the reason that it is often inconvenient or impossible to obtain, and when once secured it cannot be kept in warm weather without becoming tainted. Tainted bones should be rejected as unfit for food. Skimmilk may be substituted wholly or in part for meat food without a decrease in egg production, provided the proper grain ration is given.

FEEDING SMALL CHICKENS.

Chickens do not require food for the first 12 to 36 hours after hatching. One of the best foods that can be fed the first few days is stale bread soaked in milk. This should be crumbled fine and placed where the chickens have free access to it, and where they can not step on it.

A simple and efficient feeding trough may be made by tacking a piece of tin about three and one-half inches wide along the edge of a half-inch board so that the tin projects about an inch and a half on either side of the board, bending the tin so as to form a shallow trough, and fastening the board to blocks which raise it from one to two inches from the floor. (See fig. 4.) The trough may be from one to three feet long.

Granulated oats (with the hulls removed) make an excellent food for young chickens. There is, perhaps, no better grain food for young chickens than oats prepared in this manner.

The chickens should have free access to some kind of grit. Coarse sand makes an excellent grit for very young chickens.

One of the great difficulties in rearing fowls is to carry young chickens through the first two weeks without bowel disorders. Too low temperature in the brooder, improper food and injudicious feeding, even if the right kinds of food are given, each plays an important part in producing these disorders. After the first 10 days milk may be given more freely. As the chick becomes a little older, more uncooked food may be fed. A mixture of fine middlings, wheat bran, a little corn meal, and a little linseed meal mixed with milk makes a valuable food. Screenings from the various grains form a cheap and efficient food for chickens.

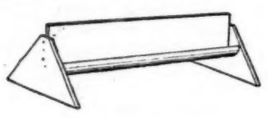


Fig. 4.—Feeding trough.

Small chickens drink frequently and oftentimes with their beaks loaded with food, which is left, to a greater or less extent, in the water supply. The drinking fountain must be kept clean. Nothing less than frequent scalding with steam or hot water will answer the purpose. A cheap, efficient drinking fountain may be made of a tin can with a small hole in one end near the side of the can, under which is soldered a crescent-shaped piece of tin, forming a lip or a small receptacle for water. If the can is filled with water and then placed on its side, a small quantity of water will run out of the opening and remain in this crescent-shaped lip. As the chicks drink this water a quantity of air will pass into the opening and a little more water will flow out.

BROODERS.

If one resorts to artificial incubation it will be necessary to provide a brooder of some kind. A brooder must be warm. The little chickens require a temperature of from 90° to 100° the first few days, and at all times they should find it so warm in the brooder that they are not inclined to huddle together to keep warm.

The brooder should be easily cleaned and so constructed that all of the floor space can readily be seen. Inconvenient corners are objectionable in brooders. If constructed of wood, circular ones are somewhat more expensive than square or rectangular ones. The floor must not only be kept clean, but dry. Top or side heat is to be preferred to bottom heat, but there must be sufficient bottom heat to keep the floor dry.

As the chickens get a few days old, plenty of exercise must be provided. One objection to many of the brooders in the market is that the chickens are kept too closely confined and not allowed sufficient exercise.

INCUBATORS.

No experienced poultryman at the present time will undertake to rear fowls in large numbers for the production of eggs and depend on the hens that lay the eggs for incubation.

There are many kinds of excellent incubators on the market. As with many kinds of farm machinery, it is impossible to say that one particular kind is better than all others. Failures are recorded simply because the individual fails to thoroughly understand the machine he is trying to operate. A successful poultryman must pay close attention to petty details.

An incubator should be well made of well-seasoned lumber. It should be easy of operation. All its adjustments should be easily made and so arranged that the more delicate machinery is in plain view of the operator. The machine should be automatic in operation. The regulating force should be placed within the egg chamber, so that the regulator may vary as the temperature in the egg chamber varies, irrespective of the changes of temperature of the room in which the incubator is placed. The change of temperature which is necessary for the complete working of the regulator ought not to be more than one degree; that is, one degree above or below the desired temperature.

A convenient appliance for turning the eggs should accompany each incubator. This may be an extra tray that is to be placed bottom side up over the tray of eggs and held firmly in this position while both trays are turned, thus completely transferring the eggs from one tray to another without jar.

DISEASE AND LICE.

Disease and lice are the great obstacles to be overcome in poultry raising. The house may be kept free from lice by a liberal use of kerosene emulsion and by whitewashing. A small window, with the interior of the house whitewashed, will make the building as light as a much larger window without the whitewash.

Gapes in chickens frequently destroy large numbers, and are caused by trematode worms in the windpipe. The number of worms is sometimes so great as to completely choke the fowl. A feather moistened with turpentine or kerosene oil and inserted into the windpipe and turned until the worms are removed is a practice quite largely recommended. Others recommend removing the worms with a fine wire or horsehair, doubled so as to form a loup; this is to be inserted into the windpipe and turned until the worms are detached, and then withdrawn, bringing the worms with it. Another remedy practiced by some poultrymen is to cause the chickens to breathe air in a confined space into which fine slacked lime is occasionally dusted.

Preventive measures are far more satisfactory than the treatment of infected fowls. The pens and yards should be kept clean and dry and the chickens kept in as thrifty condition as possible by supplying proper food and exercise. To moisture and filth can be attributed nearly all cases of gapes, particularly if the yards or pens were previously occupied by infected birds.

Chicken cholera.—This is an exceedingly fatal contagious disease, and causes enormous annual losses. The first symptom of the disease is a yellow coloration of that part of the excrement which is usually white, quickly followed by violent diarrhea and rise of temperature. Other common accompanying symptoms are drooping of the wings, stupor, lessened appetite, and excessive thirst. As soon as the symptoms of the disease are observed "the fowls should be separated where they may be observed and where disinfectants can be freely used. As soon as the peculiar diarrhea is noticed with any of the fowls, the birds of that lot should be changed to fresh ground and the sick ones killed. The infected excrement should be carefully scraped up and burned, and the inclosure in which it has been thoroughly disinfected with a one-half per cent. solution of sulphuric acid or a one per cent solution of carbolic acid, which may be applied with an ordinary watering pot. Dead birds should be burned or deeply buried at a distance from the grounds frequented by the fowls.

The germs of the disease are taken into the system only by the mouth, and for this reason the watering troughs and feeding places must be kept thoroughly free from them by frequent disinfection.

Treatment of sick birds is not to be recommended. The malady runs its course, as a rule, in one, two, or three days, and it can only be checked with great difficulty.

Roup is one of the most dreaded of diseases. The symptoms are hoarse breathing, swelled eyes, discharge at the nostrils, and sometimes a fetid breath. The affected birds should be removed, the houses cleansed and disinfected. Damp, foul air and cold drafts in the poultry houses should be carefully avoided whenever fowls are subject to roup. A decrease in the proportion of corn and an increase in the proportion of meat food in the daily ration is held by some to be highly beneficial in warding off this disease.

DRESSING AND SHIPPING.

It is of prime importance that the poultry products be placed on the market in a condition that will make them appear as inviting as possible. Proper feeding for two or three weeks before the fowls are slaughtered will improve their color materially. In most of the American markets fat fowls with a yellow skin bring the highest price. This condition may be secured most cheaply by feeding a grain ration composed largely of corn for two or three weeks before the fowls are slaughtered. The commission men and shippers state that uniformly fine quality will soon acquire a reputation among buyers. It is best to withhold food from 12 to 24 hours before killing, but the fowls should have plenty of water during this time, that they may be able to digest and assimilate food already consumed. All fowls should be killed by cutting through the roof of the mouth and allowing them to bleed to death. In packing fowls boxes or barrels holding about 200 pounds are best; boxes are better for turkeys and geese and barrels for chickens.

In shipping live poultry the coop should be high enough to allow the fowls to stand upright without bending their legs. When large coops are used there should be partitions. Put only one kind in a coop or in one division of a coop.

Fattening Turkeys.

Cooked potatoes and cooked cornmeal mixed make an excellent fattening ration if whole grain is given freely at night and plenty of milk at all times. Stuffing the turkey for two or three weeks before killing is a common practice, but during the whole process, and, in fact, during the whole fattening period, charcoal should be so placed that it may be eaten at will, and of course plenty of sharp grit, to aid digestion, must not be omitted, especially while the stuffing process is going on.

Smoking Meats Without a Fire.

It is possible to give to cured meats a delicious, smoky flavor without a smoke house or a fire. Krauser's Liquid Extract of Smoke, obtained from the smoke of hickory wood, is strongly recommended by those who have used it as a practical article for effectually, conveniently and economically preserving all kinds of cured meats. It makes the meat solid, keeps it moist and free from insects, skippers and mould and gives it a much better flavor than can be obtained by smoking the old way. Besides saving time and bother, it obviates all danger from fire and the risk of having the meats stolen, as they can be kept in a secure place instead of a detached smoke house. Every one who cures meats, no matter how much or how little, should give Extract of Smoke a trial. It is perfectly healthful and wholesome. The manufacturers, E. Krauser & Bro., Milton, Pa., will send circulars and particulars to any one who writes for them.

THE APIARY.

Hummings.

Dr. C. C. Miller, Marengo, Ill., has for this year's crop of honey five tons, or 10,000 pounds.

Prof. Lawrence Bruner, of the Nebraska State University, says that that State has more different kinds of plants and flowers from which bees make honey than any two States of the Union. He has over 200 kinds of bees mounted and labeled in his collections.

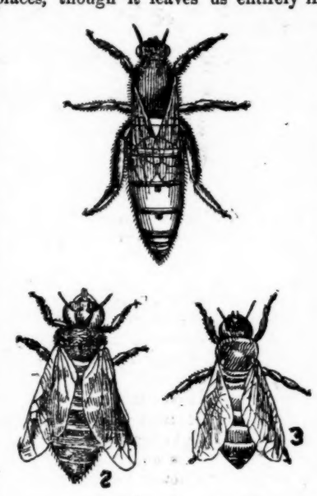
BEE KEEPING.

Its Past and Future—What Has Been Accomplished—What Needs to be Discovered.

BY MRS. J. N. HEATER.

[Read before the National Bee-Keepers' Convention at Lincoln, Neb., on Oct. 8, 1896.]

From time prehistoric bees have been kept with varying degrees of scientific intelligence and corresponding success. The Bible mentions honey in many places, though it leaves us entirely in

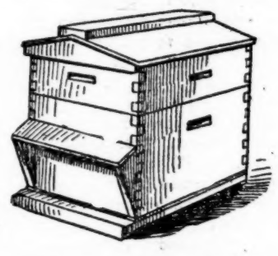


1. QUEEN. 2. DRONE. 3. WORKER.

the dark as to the methods of obtaining it in those times; but we fear no challenge to the assertion that they lived in the primitive way in rocks and cliffs, and the honey was secured either by strategy or nerve, and possibly the method would furnish a valuable suggestion to intelligent scientists of to-day.

We read not long since of recent discoveries in Pompeii of jugs of well-preserved honey having been found in the ruins of the buried city during official excavations; giving evidence to us 1800 years later that honey was an article of commerce at that time, though that of itself gives us no idea of their methods of producing it.

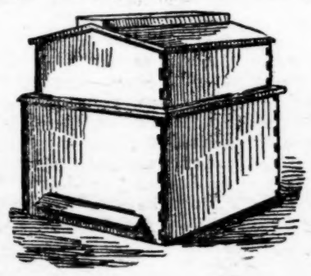
We are indebted to the Old World scholars for our first treatises on this interesting study, but "they builded better than they knew," in that they awakened an interest on the subject in



ORDINARY SINGLE-WALLED HIVE.

the minds of thinking men on our shores who, combining their own research and experiments with the delving of the foreign masters, have given to the world some of the most valuable and practical knowledge of our time.

In the good old days of our grandfathers' time, men contentedly plodded along with their ox teams, their crude farming implements, and their native black bees in log gums or straw skeps. "Work, never ending work," was their watchword, and the dear old souls by frugal economy and patient industry



DOUBLE-WALLED, CHAFF-PACKED HIVE.

succeeded in accumulating wealth. But their sons, whom we may style our fathers, came upon the field of action with a new watchword; for on every hand was heard the cry of "Progress."

One invention succeeded another; the people themselves were astonished at their own achievements. The ox was sent to the stock-yards and the horse given his place in the fields to operate the wonderful new machinery.

Bee-keepers were making a mighty effort to

KEEP UP IN THE RACE,

and it is with interest we follow the progress of thought and experiment, and see the first attempt to domesticate the native bees in the original log gum, being but a section sawed out of the tree in which they were found. Next we see them transferred to the crude straw skep. Genius saw the possibility of further achievement, and the old box hive was evolved; but it was reserved

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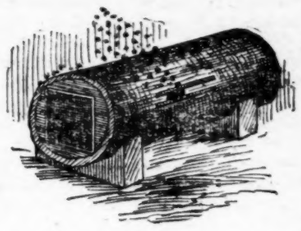
Annual sales more than 6,000,000 boxes.

for our beloved Father Langstroth to improve upon all former efforts and give to the bee-keeping fraternity the most practical movable frame hive the world has ever seen, and which to the present time remains standard. Naturally this gave a strong impetus to bee-keeping as a business, but at that time no bees had ever been imported into this country, and every experiment had



BEE LOG.

the disadvantage of having to be practiced upon the little black native. In 1847 our German brothers introduced the Italian bees into their country, and in 1859 they were shipped into England. During the same year our brothers across the line imported the first Italian bees to the shores of America. Then began a period of experiments, development and improvemant in bees and bee culture such as we have never had a record of before nor since. America, we are proud to note, took the lead of all nations in expensive research in foreign fields. Bees from all countries of the East, including many of the islands where distinct races were found, were sent to us for inspection or experiment; then was scientific work begun in earnest. The specialist bred for size, he bred for color, he bred for trait, till the poor thing hardly knew what it ought to be when it did emerge from the cell. The surprising thing was that the workers, being of the feminine gender, *they* were even bred for length of tongue, and those found with the longest tongue and the greatest activity of the same were the ones most sought after. (Happy bees.)

TRULY SCIENTIFIC BEE-KEEPING,

then, we may say, dates back not

SWEET CLOVER (*Melilotus alba*).

more than 40 or 50 years, yet what gigantic porportions it has assumed, representing millions of dollars in the annual production of honey alone, to say nothing of the capital represented in stock, factories, etc., and, not least of all, we as a body are recognized in the commercial world.

We see, then, that the past has but fitted us for the future of our work, and we feel that while we have appliances so admirably adapted to their uses, our attention in the future should be given more to the practical management of bees, to reduce the labor and expense to the minimum, and the more the work is simplified, the more we shall feel we are advancing. We believe that "mixed farming," so to speak, in the apiary will prevail in the near future. Better results are obtained from working for both

STRAW HIVE.

comb and extracted honey, and even a queenless nucleus can be made to care for extra queen-cells. If the minipulation of bees shall be as much improved upon in the next half century as the general knowledge and appliances have for the same length of time in the past, we can but wonder what we, as bee-keepers, will be doing 50 years hence.

Time has brought us the comb foundation, the extractor, the smoker, and many other appliances which we could not dispense with; but shall we feel that our calling

HAS REACHED ITS ZENITH,

and be content with what we have and what we know? So far we have kept pace with the other agricultural pursuits; but we look about us, and behold, in many places the horse is driven from the field by the traction engine, and again we see a monster machine cutting, thrashing and sacking the grain at one operation; and we ask ourselves, what are we bee-keepers going to do to keep up in the race? Are our geniuses sleeping, or are they thinking out some marvelous thing in silence to surprise up with?

It is reserved for some one present with us to-day to make his life a blessing to humanity and his name immortal by telling us for a certainty how to secure satisfactory crops of honey without increase of bees; how to keep extracted combs from one season to the next, safe from the ravages of the moth; and how to gain the best general results with the least expense and labor; for since we of the present day have taken for our watchword "Protection and Reciprocity," we have no fears but we shall receive reasonable prices for our product if put upon the market in proper condition.

A NECTAR YIELDER.

Sweet Clover (Melilot) as a Honey Plant.

BY WM. STOLLEY, GRAND ISLAND, NEB.

[Read at the North American Bee-Keepers' Convention, Lincoln, Neb.

My experience respecting sweet clover was gained during the last 16 years.

In the Autumn of 1880 I sowed the first seed, and in the Summer of 1882 I had the first bloom for my bees to work on.

My location is naturally not well adapted to bee-keeping, and what success I have had is, I may say, nearly exclusively attributable to sweet clover now growing in the vicinity of my farm.

Before sweet clover grew in larger quantities I got some surplus in favorable seasons, but the honey was of a very inferior quality and rank in taste. Since I have sweet clover growing in sufficient quantity within easy reach of my bees I consider that I have a very satisfactory location, with reliable resources for my bees. I honestly believe that there is no nectar-yielding plant, (having reference to Nebraska and adjoining States) that can in any way cope with sweet clover as to reliability as a honey yielder. While I write this (September 20) the uncut melilot has considerable bloom on new shoots on the lower parts of the stalks, while the ripe seed on the upper branches has already dropped to the ground.

Sweet clover cut about the first of July is white with bloom now, and bees work well on it.

What final result the eventual spreading of sweet clover all over our State will bring about remains to be seen.

I do believe that sweet clover will soon enable the so-called Western States to rank with the best in the Union as to honey production, although without this plant this never would be possible. I have noticed that the driest seasons, when nearly all other crops fail, sweet clover is at its best, and therefore I believe that tracts of sandy lands, not redeemable by irrigation, gradually will be converted into first-class honey ranches, with sheep-raising as an adjunct, by the rational culture of sweet clover.

This Summer's experience has taught me two new lessons about sweet clover. One of them is that while a destructive hailstorm destroyed the entire small-grain crop in my neighborhood, sweet clover recovered so quickly from the temporary set-back that hardly anything was lost to the bees.

The other lesson is that early cutting of sweet clover in June does not always insure a second growth of it, if it is done during a very wet spell, and when at the same time the cutting is rather close to the ground. I lost a field of about four acres, which was cut on the 15th of June, and was cut quite close to the ground.

The following 10 days we had nearly five inches of rainfall, and the land, although not overflowing, was kept very wet, and the result was that the entire field of melilot was killed out, hardly a plant escaping. This season (1896) melilot began to bloom as early as June 15. In other seasons it is sometimes a week later in blooming.

Now, when I state the result obtained in my apiary for the year 1895 and 1896, keeping in view that sweet clover is nearly my only reliable resource up to September 1, as to surplus this year, I have said all I can say about sweet clover "as a honey plant."

In 1895 my average surplus was a little over 175 pounds per colony (Spring count), and my best colony gave me 236 pounds surplus.

In 1896, under adverse conditions, my average surplus per colony is a little over 100 pounds, with about 35 to 40 pounds of Winter stores in the brood-chambers.

My best colony gave me 210 pounds of surplus. I had but three swarms from 26 colonies, but I was compelled to increase up to 35 colonies, so as to prevent much swarming.

A Welcome Utensil.

The physicians sounded the alarm in the matter of consumption of fruit stones and the danger was readily recognized by laymen, and now the wonder is why people did not long ago see the unfitness of fruit stones as a diet, since they had the wisdom to discard potato skins and wheat and oat husks, which are just as rational articles of diet.

The difficulty of disposing of the fruit stone has doubtless made it a part of our pie system, but the danger of its use has brought into existence the most necessary as well as the neatest and handiest of all kitchen utensils in the Enterprise Raisin and Grape Seeder, manufactured by the Enterprise Mfg. Co., of Philadelphia, whose ad. appears in another column of this paper.

This little machine fastens on the table and is so simple a child can manage it, and seeds a pound of fruit a minute without waste. It never gets out of order and is very readily cleaned. The danger of the stones not considered, this utensil is one of the most necessary articles about a kitchen, saving time and labor and rendering the fruit more palatable. A woman's time and patience are too valuable, though she be only your cook, to sit for hours preparing raisins and grapes by the old method, pinching the seeds out with her fingers, when you can for a nominal sum provide this modern time and labor saver, the Enterprise Raisin and Grape Seeder.

Have the Best.

The farmer who will make a superior quality of hams, shoulders, bacon, and sausage will find market for them at an advance as soon as he can make their superiority known. A neighbor, in the poultry business largely, gets four cents a dozen more for eggs and two cents a pound more for dressed poultry than the general market price, because his eggs are always fresh, and neither they nor the flesh of the poultry contaminated by unclean food or by the fowls running on a dunghill.—*Galen Wilson.*

DOOR YARD HORSES

A name applied to such as put on style on short drives, but soon "peter out." Many of the three rod samples of wire fences shown at the fairs, are built on this plan. The strong spring works nicely, but when required to regulate 40 or 80 rods it fails. The only "long distance" regulator is made by

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BUY NO INCUBATOR

and pay for it before giving it a trial. The firm who is afraid to let you try their incubator before buying it, has no faith in their machine. We will sell you ours ON TRIAL, NOT A CENT until tried, and a child can run it with 5 minutes attention a day. We won FIRST PRIZE WORLD'S FAIR and will win you for a steady customer if you will only buy ours on trial. Our large catalogue will cost you 5 cents and give you $100 worth of practical information on poultry and incubators and the money there is in the business. Plans for Brooders, Houses, etc. 25c. N. B. Send us the names of three persons interested in poultry and 25 cents and we will send you "The Bicycle: Its Care and Repair," a book of 100 subjects and 80 illustrations, worth $5 to any bicycle rider.

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A GOLD DOLLAR is about the actual worth of our new book on Incubation and Poultry. Contains a full and complete description of the Reliable Incubator & the Brooder of same name, together with cuts and instructions for building poultry houses and much of interest and great value to the poultryman. Sent on rec't of 25c. RELIABLE INCUBATOR & BROODER CO., QUINCY, ILL.

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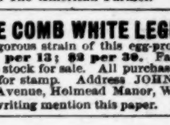

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77TH YEAR.

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"O fortunatos nimium sua si bona norint agricolas."—VIRG.

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TO ALL TO WHOM THIS PAPER SHALL COME.

Greeting: This paper is sent you that you may have an opportunity to see it and examine it, with a view to subscribing. We ask you to compare its contents, objects, and price with those of other papers, and see if you do not come to the conclusion that you ought to have it; that you cannot afford to do without it. We can assure you that if you send in your name for one year that you will find it one of the most profitable investments that you can make. We hope to make and keep it so interesting that you will think that every number more than repays you for the subscription price for a year. Please call your neighbor's attention to the paper.

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Don't fail to improve the fine opportunity we offer you to get the Gleason Horse Book. This is admitted to be the best horse book ever written, and more than 100,000 copies have been sold at $3 apiece. We will send it to any address for a club of three subscribers at 25 cents each.

LET pig-raisers take courage. Everything points to a profitable season for them, if they can only keep off the cholera.

THE world raises about 1,400,000,000 bushels of rye a year, of which we raise only about 25,000,000 bushels, or one sixty-fourth.

GREAT BRITAIN has bought 61,000,000 bushels of wheat a year from us for the past two years, or less than one-third of her entire purchase.

IT is felt that the meat supply is very low, and prices must advance very markedly after the election. The domestic demand is large and increasing, and the Europeans are short.

THE Texas State Grange adopted resolutions commending the Governor and Legislature for preventing prize-fighting in the State, and denouncing the practice of playing base-ball on Sunday.

SECRETARY Morton says that about 45 per cent. of the wheat in the country is still in the hands of the farmers, and that the rise in price since Sept. 1 has made them $58,000,000 richer than they were two months ago.

Do not forget THE AMERICAN FARMER when providing for your Winter reading. Nowhere else can you get so much good reading matter for so little money.

A GREAT shortage of potatoes, both in England and on the Continent, is one of the strong influences that will help advance the price of wheat. For the first time in several years, France and Belgium will both have to import large quantities of potatoes.

AT its next session the Pennsylvania Legislature will make a much needed reform by standardizing certain packages. The main things will be the barrel and the crate. The first now varies from 10 to 12 pecks, and the second from 32 quarts upward. A regulation of these things has long been desired by all parties.

IN BLOCKS OF THREE.

THE AMERICAN FARMER expresses its appreciation of the work of its friends this year by seeking more and more to advance the interests of the farmer. That it may go into every farm household in the United States, we make the following offer for

BLOCKS OF THREE:

If you get two subscribers in addition to your own, three in all, we will send the three papers for

FIFTY CENTS.

THE PRODUCE MARKET.

Led by wheat, the prices of all kinds of farm produce have been rising for over two months now, and the advance is likely to continue. It would have been much more marked but for the uncertainty in the financial situation, which has led money-holders to keep a tight grip on their cash and make practically prohibitive loaning rates to those who recognized the upward tendency of things and wanted to speculate upon it.

The rise in wheat is due to a general shortage all over the world, and an almost total failure in a large part of Hindustan.

Hindustan usually raises from 210,000,000 to 300,000,000 bushels of wheat a year, of which she exports about 23,000,000 bushels. Last year her crop was not large—only 234,379,000 bushels—so that she has no surplus, while this year drouths have extended over the greater portion of the wheat-producing area and destroyed all hopes of a crop. A famine is imminent, and the British Government is preparing to provide for the people by starting work on railways and similar enterprises by which they can get money to buy food.

Very large shipments of wheat are being made from California and Oregon to India, and it is expected that these will continue until a new crop can be raised next year.

To this failure in Hindustan must be added shortages in nearly all the other principal wheat-growing countries.

Australia, which usually exports 25,000,000 bushels of wheat, is now having to import grain.

The Argentine Confederation, which sends to Europe as high as 60,000,000 bushels, will not be able to send more than 32,000,000 bushels this year.

There is a very great shortage in Russia, but there is no way of arriving at anything like correct figures, since statistics is not cultivated as a science in the dominion of the Czar. This makes Russia the great menace to the wheat market, for no one can more than guess what she will send out. She has broken prices, and ruined everybody's calculations last year by exporting as high as 160,000,000 bushels. It is now believed that she cannot have more than 300,000,000 bushels, all told, nearly all of which she will need at home. This view is confirmed by the reluctance of Russian dealers to ship, except to fulfill contracts. During September they only sent out 9,000,000 bushels against 12,000,000 bushels during the same month last year.

England, which usually buys 200,000,000 bushels a year, to supplement the 50,000,000 bushels which she raises herself, will, though her own crop is good, have to buy fully that much this year, because of the shortage of potatoes and other important crops.

In France the crop is not so good as last year, and besides her potato crop, which is enormous, has fallen very short this year. Also barley.

Germany, who buys about 30,000,000 bushels of wheat a year, half of it from the United States and Canada, has a poor crop this year, with a large diminution in potatoes, so that she will have to buy more grain than usual.

Austro-Hungary, which used to be considered "the granary of Europe," has much below an average crop.

This leaves the United States and Canada the main reliance of Europe for breadstuffs.

Our own crop is not over two-thirds that of the great yield of 1891, when it was 612,000,000 bushels, and is 60,000,000 bushels under those of 1894–5. So we have not a very large surplus. We may have 125,000,000 bushels to export, but we should get good prices for it.

But we have an immense corn crop, and Europe has been taking very largely of our corn of late years. She will take much more than ever in the next few months.

As soon as the election is over, and the financial question settled rightfully, as we confidently expect that it will be by the election of Maj. McKinley, we are sure that there will be strong, well-sustained advance in all lines of produce.

THE importance of the potato to Europe is shown in the following table of production last last year:

Great Britain . .	600,000,000	tons.
Germany	1,106,000,000	bushels
Russia	621,000,000	"
France	443,000,000	"
Austro-Hungary..	434,460,000	"
United States . .	282,146,000	"

The average crop of the world is about 3,000,000,000, or 500,000,000 bushels more than the average wheat crop.

IRRIGATION IN KANSAS.

The fourth session of the Kansas Irrigation Congress was held at Great Bend, Oct. 17–19, and was full of interest, though the attendance was not large, owing to the political excitement.

There was a general expression of sober, practical confidence that irrigation was to change agricultural conditions in the State, and vastly increase its wealth by giving large and certain remuneration to the farmer. But the farmers were specially cautioned against going into this in the rough-and-ready, head-over-heels method characteristic of the State. They must begin carefully, and in a small way, and expand as they learned wisdom.

Much confidence was expressed in the deep-well system. President Churchill, in his annual address, said:

I believe in irrigation, but not in any wild, flighty way. The pump, windmill and the reservoir are indispensable now that we have learned their pleasures and uses. This is my advice from a few years' experience: Get a good steel back-geared windmill, a fair-sized reservoir—not too large, a small vegetable garden for the family, and the rest in the orchard and vineyard and some small fruits. Go slowly and thoroughly. Start with an acre the first year and always make the limit what you can care for and cultivate well. Many of the failures have come from trying to spread over too much ground at the start. Stock the reservoir with fish, build an ice-house near by, and you have made a long stride toward prosperity and pleasant home surroundings. In my opinion, the men who can make a living from their irrigation plants alone in the present development of the country are few. When the orchards and the vineyards get to bearing they will become self-supporting and pay a profit. In the meantime, my friends, what shall we do? Turn your eyes to the dear old cow in the pasture, the greatest mortgage lifter of the age, and the best investment in this part of the country to-day. I would say to those who can get out to cheap pasture of the West, to those who will come in and settle with us, get a few cows, save the increase. While the irrigation plant, with all the blessings and comforts it brings, is almost indispensable, yet the cow is the dearest friend to you and your family, an absolute necessity. Do not put all your means into the ground, mill and reservoir and improvements; a few cows will make your investment complete, afford you an assurance for prosperity, an insurance against adversity.

It has been demonstrated that there is water enough within reach under the soil of Kansas to furnish the surface with all the moisture needed. The average cost of a deep-well plant is about $400.

Dr. G. Bohrer, of Chase, Rice County, urged the culture of sugar beets, alfalfa, and the cow. He could raise 800 bushels of beets or six to 10 tons of alfalfa per acre by irrigation.

"WHERE THE MONEY GOES."

The Louisiana Sugar Planter says: "The Government report of the imports of sugar has been made up to Sept. 1, and shows a total import of sugar for the eight months reaching the value of $74,000,000. These include $12,000,000 of free sugar from Hawaii.

The imports of beet sugars during this period have been 375,000 short tons, against 98,000 short tons the previous year. From the Hawaiian Islands we have received 173,000 short tons, against 123,000 short tons the previous year. The imports of cane sugar were 904,000 short tons, against 1,124,000 short tons the previous year. The large increase in the imports of beet sugar and the diminished imports of cane sugar reflect the loss of the Cuban crop. The bulk of the beet sugar, or 294,303 short tons, came from Germany, Austria furnishing but 22,000 tons and France none separately reported.

One-fifth of our sugar supply has come to us from Germany. Egypt furnished us about 63,000 tons of sugar, against 11,000 tons the year before. A large increase in the imports of sugars is reported from the East Indies—151,000 tons, against 31,000 tons the year before. Cuba gave us but 185,000 tons, against 781,000 tons the year before. We got 114,000 tons from the British West Indies, against 71,000 tons the year before, and 179,000 tons from the other West Indies, against 71,000 tons the year before.

As Hawaiian sugars come in free of duty, the value of the Hawaiian supply reaches nearly $12,000,000, and is only surpassed in value by our imports from Germany, which are rated at a value of $13,250,000. Cuba sent us in $9,000,000 in value, the West Indies $8,000,000, the East Indies $6,000,000, and British West Indies, $5,000,000; Brazil and Egypt $3,000,000 each.

The average value of the beet sugars imported during the year was 2.25 cents per pound and the average value of the cane sugars was 2.31 cents per pound. The value for August for beet sugar was 1.9 cents per pound and for cane sugar 2.1 cents per pound."

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THE APPLE CROP.

It is now estimated that the apple crop of the United States will reach 59,000,000 barrels, against 60,500,000 barrels in 1895, and 57,629,000 barrels in 1894.

In New York and New England the crop is simply phenomenal, reaching 16,000,000 barrels, as against 7,000,000 last year.

The Michigan crop is also immense, and of fine quality.

Canada has also the largest crop on record.

The Interior, alone, seems to be short, and not to have raised nearly enough fruit for the home requirements.

The immense crop has produced low prices, and these, in conjunction with a shortage in England, have stimulated exports. Already more than 1,000,000 barrels have been shipped from the Atlantic Coast this year, or more than one third more than the entire exports of last year.

The prospects are good for an advance in prices.

The average cost of sending a barrel of apples from Boston to Liverpool is about $1.10. This includes freight, primage, dock expenses, and auctioneer's commission. The quotations in England for Baldwins run from $1.50 to $2.50.

The cost of getting the apples to Boston from Eastern Massachusetts is placed at from 42 to 50 cents. This is made up of: Picking, 12 to 20 cents; barrel, 17 cents; sorting, heading and getting to railroad, eight cents; transportation, five cents. Parties will contract to pick the apples at 12 cents, but if it is done more carefully, by farm-hands, it may cost as high as 20 cents. As a rule it pays better to have the picking and sorting done carefully. A barrel of sound apples will sell at a good price, after the others have rotted themselves out of market.

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THE farmers of the little island of Jersey contrive to make labor honorable and esteemed, as well as contribute to social enjoyment, by doing as much of their work in common as possible. They have, for instance, "plowing-bees," by which each man's land is in turn thoroughly plowed. They are similar to our old-fashioned "house-raisings" and "log-rollings." All of a certain coterie of farmers—generally of the same political party—gather at one man's farm on a certain day, each one takes a certain part of land, as much as as he can finish in a day, they all start in, and by nightfall the whole farm is plowed, and plowed well, for there is competition among them to do the best work in a given time, and each man's is compared with the others. The evening is spent in simple jollification, and pleasant society. Then they all gather at another farm on a subsequent day. One result of this is that the Jersey farmers are the best in the world. They raise on on average 10 tons, 333 bushels, per acre. They sometimes reach 600 bushels per acre. They hold their lands at from $600 to $1,500 an acre, and they are only sold when death or misfortune overtakes them.

POTATOES seem to be low everywhere. In a place in Brittany, France, the farmers made an attempt at forming a combine, by which the price of potatoes should be held at 3½ francs (70 cents) for a sack of 50 kilograms (110 pounds). Some English farmers came in who offered to sell at 2½ francs per sack. The Frenchmen set upon them and beat them until they promised not to take less than the fixed price.

WE always believed that the pawpaw would be found good for something, and have wondered that our scientists did not investigate it. Now some lay observer claims that it has a great amount of pepsin, and it is said that if wrapped in them, the leaves will make tough meat tender.

ONLY about one-third of the world's population eat wheat and rye bread. The usual estimate is 4⅜ bushels for each person. For the last five years the world's wheat crop has averaged 2,540,000,000 bushels a year. Our average has been about one-fifth of this, or 500,000,000 bushels. Russia exports more wheat than any other country. We are second to her.

THE world's corn crop averages about 2,600,000,000 bushels a year, of which we raise over four-fifths.

SUBSCRIBE FOR THE AMERICAN FARMER.

We hope that every man who receives this issue of THE AMERICAN FARMER will at once subscribe. We feel sure that when he looks over the paper carefully, and considers all the good things it offers him, and the exceedingly low price of subscription, that he will decide that he cannot afford to do without it.

THE AMERICAN FARMER is the oldest agricultural paper in the country. It was one of the very first farming journals in the whole world, and we know of none now published that began existence anywhere near as early as it did. It has always maintained the highest character for progress, plain, everyday, practical information, and reliability. No paper in the country stands higher. It has an average circulation of 100,000 copies a month, and goes to every part of the country. It is emphatically a National paper, for it represents every man who tills the soil anywhere under the Old Flag.

Every branch of husbandry is represented in its columns by the soundest advice and discussion of purely practical matters.

Remember that you can have all this for only 25 cents a year. It is incredibly cheap. If you get two of your neighbors to join you, you can have the three subscriptions for one year for 50 cents.

Do not postpone. Send in your subscriptions at once.

RAISING CHICKORY.

It seems that the farmers in Western Nebraska are following the advice we gave to farmers generally sometime ago, and are turning their attention to raising chickory. It is the best substitute for coffee known, and in many parts of Europe is preferred to coffee. All real "French coffee" has more or less chickory in it, and those who have grown accustomed to the mixture prefer it to pure coffee. Very much of the coffee we use in this country is adulterated with chickory, and substantially all the "coffee extracts" have chickory in them.

We import about 10,000,000 pounds of raw chickory every year, and about 500,000 pounds more "burnt, roasted, ground, or otherwise prepared." The manufacture of chickory has become so important in this country that the manufacturers secured a duty of 2 cents a pound upon the manufactured product, while the raw comes in free.

The Nebraska farmer gets all the way from three to eight tons an acre of chickory roots, and the price ranges as high as $10.50 a ton. There is a good market for it, and it will be quite awhile until we raise enough to meet the home demand.

Chickory is a plant of the dandelion family, and will grow anywhere that dandelions do.

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FOREIGN clamor against the healthfulness of our meats is simply selfish lying, without a single scintilla of fact. In every way the American hog is the best in the world. He is the healthiest animal to be found anywhere, because he gets more, better and purer food than any other. There is no comparison between an American hog, fed and fattened upon the best sound grain and ranging over healthy pastures, and the European hog, shut up in noisome surroundings and fed upon all manner of disgusting offal.

IN South Dakota they have been trying the Russian thistles as fuel with such success that a mill-owner at Chamberlain who burned them last year in place of coal has made a standing offer to the farmers of $1.50 a ton for all that they will haul in. We don't know much about handling the pests, but we should think, from all descriptions, that a farmer who gets a ton to the mill earns his $1.50.

PERSONAL.

Frank Edwards, a well-to-do farmer of Preston, Chenango County, N. Y., was detected in delivering watered milk to the co-operative creamery at that place. The other patrons of the creamery decided to give him the alternative of paying $400 into the creamery's treasury or of arrest and prosecution. He paid the money. According to his own statement Edwards had only made $10 by adulterating his milk.

C. Otto, better known as the banner butter-maker of Racine County, Wis., has sold his business to Mr. Cyrus Benedict, of Brighton, Wis.

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THE MARKETS.

Produce.

NEW YORK, Oct. 28.—Beans—Marrows, choice, 1896, 1.60 per bu., medium, 1896, 1.35; pea, do 1.22a1.25; Foreign pea, none; do medium, none; white kidney, 1.55a1.60; red do choice, 1896, 1.35; Lima, Cal., 1895, 1.50; green peas, 75a77½; do foreign, per bag, 72½a75.

Dried Fruits—Apples, evaporated, 2½a5½ per lb; peaches, sundried, 1896, peeled, per lb., 6a8; cherries, 1896, per lb., 9a10; blackberries, 1896, per lb., 4½a4½; raspberries, evaporated, 1896, per lb., 14½a15; huckleberries, 1896, per lb., 6½a7.

Green Fruits—Apples, 1.00a1.75; pears, per bbl, 1.50a4.00, grapes, 7a15 per basket; cranberries, 3.00a5.50 per bbl.

Eggs—Near by, fancy, 22a23; State, fresh, 20a21; Pennsylvania, 20a21; Western, fresh, 19; do fair to good, 16a18½.

Hay and Straw—Hay, No 1, 77½a82½; do No 2, 70a75; shipping, 60a65; clover, mixed, 60a65; straw, long rye, 85a90; do short rye, 55a65; oat, 35a40; wheat, 35a40.

Poultry—Live Poultry—Chickens, Spring, per lb., 7½a8; fowls, per lb., 6½a6½; roosters, per lb., 4½a5; turkeys, mixed, 9; ducks, local, per pair, 60a65; geese, local, per pair, 75a1.35. Dressed poultry, turkeys, 10a12; Spring chickens, large, per lb., 8a12; Philadelphia, fancy, 13a15; fowls, choice, Western, 6a7; old roosters, 5½a6; Spring ducks, 12a13; squabs, dark, per doz., 1.25; white, 2.00.

Game—Woodcock, per pair, 75a1.25; partridge, per pair, 60a1.00; grouse, per pair, 80a1.00; English snipe, per doz., 1.75a2.25; golden plover, per doz., 1.75a2.00.

Vegetables—Potatoes, 1.00a1.50 per bbl.; sweet potatoes, 1.00a1.75; cauliflower per bbl., 75a1.25; cabbage, per 100, 2.00a3.50; carrots, per bbl., 75a1.00; celery, 10a40 per bunch; eggplant, 1.25a1.75 per bbl; green corn per 100, 50a1.00; green peppers, per bbl., 40a1.00; tomatoes, per box, 30a50; turnips, 50a70 per bbl; squash, marrow, per bbl., 60a75; onions 1.25a3.00 per bbl.

New Butter—Creamery, Elgin and other Western, extra, 20; creamery, Western, firsts, 18a19; creamery, Western, seconds, 15a17; creamery, Western, thirds, 12½a14; State dairy, half-firkin tubs, extras 17a18; do dairy, half-firkin tubs, firsts, 15a 6; State dairy, half-firkin tubs, seconds, 13a14; Western imitation creamery, seconds 10½a11½; Western dairy, firsts, 11½a12½; do seconds, 9a10; Western factory, firsts, 9½a10; Western factory, seconds, 8½a9; Western factory, thirds, 7a8.

Cheese—Full cream, large fancy, 10½; do do fair to good, 9½a9¾; do do large, common to good, 7½a8½. Full cream, small, choice to fancy, 10a10½; do do good to fine, 9½a9¾ Skims, small, good to choice, 5½a6½; do poor, 2a2½.

Hops—The market is still very narrow, though there are unmistakable signs of better prices and of more demand. English advices are firmer, with increasing demand for fine stock. After the election of the sound money party we predict a better trade in hops, as well as in most other farm products. New York State crop, '96, choice, 10½; do do medium to prime, 8a10; do do State crop of 1895, choice, 7a8; do do medium to prime, 5½a6, common, 3a4. New York State crop of 1894, 2½a4½; do do, old olds 1½a2½; Pacific Coast crop of '96, choice, 10½a11½; do do medium to prime, 8a10; do do crop of '95, choice, 7; do do medium to prime, 5a6½; do do common, 3a4; Pacific Coast crop of '94, 2½a4; German, etc., crop of '96, 24a27; do do crop of '95, 14a18.

Grain and Provisions.

CHICAGO, Oct. 30.—The following shows the range of prices:

	Open.	High.	Low.	Close.
WHEAT—				
December	71½	73½	71½	73
May	75½	78½	75¼	77½
CORN—				
December	24½	25½	24½	25
May	28½	28¾	28	28¼
OATS—				
December	18½	18½	18½	18½
May	21½	21½	21½	21½
PORK—				
January	7.77	7.87	7.75	7.85
May	8.20	8.20	8.20	8.20
LARD—				
January	4.40	4.45	4.37	4.42
May	4.62	4.65	4.60	4.65
RIBS—				
January	3.82	3.90	3.82	3.87

Cotton.

NEW YORK, Oct. 30—The cotton market opened with local traders in control and very little disposition to do business until after election. The fact that the market showed stability yesterday in the face of extreme stringency in money received much favorable comment. The market opened at a decline of 2a4 points, and futher declined to 1a5 points on indication of 3,100,000 bales coming in sight by Oct. 31, against 2,800,000 bales for the same time during the big crop year. Selling was checked partially by reports of firmness and activity in print cloths at Fall River, with large sales for January, February, and March, and 2½ refused last night. Trading during the afternoon was slack, but a sharp rally followed. The market closed firm at a net advance of 2a4 points.

The following shows the range of prices:

	Op'g.	High.	Low.	Close.
December	7.99	7.95	7.85	7.95
January	8.01	8.06	7.96	8.06
February	8.05	8.10	8.02	8.11
March	8.10	8.18	8.06	8.17

Live Stock.

NEW YORK, Oct. 30.—Beeves—Steers, active and higher; rough stock, slow and weak; native steers, 3.75a4.55; stags and oxen, 2.35a3.75; bulls, 2.05a2.60; dry cows, 1.25a2.15. Cables quote American steers at 10a10½ dressed weight; sheep at 7a9; refrigerator beef at 7½a8. Exports to-morrow, 1,310 beeves and 4,409 quarters of beef.

Calves—Veals and grassers, steady; no demand for Westerns; veals, 4.00a7.00; grassers, 2.25a2.75; good Westerns, 3.60.

Sheep and Lambs—Slow and weak; sheep, 2.00a3.25; lambs, 4 12½a4.80.

Hogs—Steady, at 3.80a4.10.

CHICAGO, Oct. 30.—With a good demand for cattle prices averaged a little higher for fat shipping beeves, which were extremely scarce. The bulk of the cattle crossed the scales at 4.10 a4.85, with no good steers below 4.35. Sales at 5.00 were numerous, and a few fancy cattle sold at 5.10a5.15, the best being only 10c. lower than a year ago. The stocker and feeder trade was fairly good, with sales largely at 2.85a3.65. Texas cattle sold at 2.80a3.25. Western rangers sold largely at 3.85, and a few at 3.90a4.00.

There was a fairly active demand for hogs. There was some weakness early in the day in light and packing droves, but the market rallied later on good buying. Common to prime lots sold at 3.85a3.40; packing droves selling at 3.00a3.25, and choice hogs of various weights sold close together once more. The syndicate paid 3.35 for light hogs.

In sheep there was a good demand at steady prices. Inferior to choice sheep sold at 1.50a3.00; feeders selling actively at 2.65a2.80; Western range sheep sold largely at 2.75a3.00, and a few prime heavy natives brought 3.25a3.35. Lambs sold at 3.00a4.40, mostly at 3.15a4.00.

Wool.

BOSTON, Oct. 24—The demand for wool continues an active one, but does not reach such a large volume of sales as in the previous weeks. The market, however, is remarkably firm and during the excitement has generally risen at least a cent a pound in the grease.

For Ohio and Pennsylvania fleeces there is a fair demand, but rather quieter than in previous weeks. The market, however, is firm at the prices asked. The wool is regarded with much favor by the speculative element and is being held in some cases above the market. We quote in this market Ohio X, 16a17; Ohio XX, 18a19; Ohio XX and above 19a20; and No. 1, 19a21.

For Michigan wools we report a fair demand but nothing heavy. Prices upon these wools are in keeping with other fleeces, decidedly strong. For X 15 is the lowest possible price, and offers made below that figure are not considered. The stock, however, is a considerable one and not much has been moved.

For delaine wools there is a quiet demand, but prices maintained. There is no disposition to shade quotations, no matter how firmly pressed. Unwashed combings are very strongly held and in fair demand. We quote this week Ohio delaine, 19a20; Michigan, 18; unwashed quarter-blood combings, 15a16; and three-eighths at 15a16; washed combings we quote at 20a21 for No. 1, and 20a21 for No. 2.

For Texas wools there is some inquiry, but not a very heavy trade to report. Prices are higher than a month ago and for the best wool cannot be shaded. We quote clean, 26, for fine and 23a25, for medium Fall wools. In Spring wools, fine, 12 months' growth, clean, 31a32; and from six to eight months' growth, 29a31; medium of year's growth is worth, 26a28, and six to eight months' growth, 25a27.

The demand for Oregon wools shows no change. Prices are fairly well sustained, though hardly as strong as other wools. We quote prices, clean, as follows: Eastern No. 1, 29a31; No. 2, 27a29; Valley No. 1, 28a29, and No. 2, 26a28.

There is only a fair demand for California wools, with no feature to note. The demand is mostly for Spring wools. Secured quotations are as follows: 29a31 for northern free 12 months, and 28a29 for eight months; 28a30 for southern 12 months, and 25a26 for six and eight months. Fall wools are quoted at 24a26 for free and 23a24 for defective.

Pulled wools are meeting with a good demand and are certainly stronger. The demand for A's has been considerable and the supply has run rather short. B's are still in active demand and very firmly held. The lower grade wools are not in such good demand and are the only pulled wools not quoted higher by holders. We quote on a secured basis as follows: Fine A, 32a34; A supers, 29a30; B supers, 25a27; C supers, 22a24; fine combing, 31a33; western extra, 29a32.

Territory wools continue to be very freely moved. The demand has not been so active as in previous weeks, but the wool is being held with much firmness, and while in places the advance is not very marked, in other quarters there is a strong determination to hold the wool for higher rates. We quote secured basis Montana fine, 31a33; fine medium, 31; medium, 29a31; Wyoming and Utah fine, 30a32; fine medium, 28a30; medium, 27a28.

We quote the selling prices of the market for leading descriptions as follows:

	Cents.
Ohio and Pennsylvania No. 1 fleece	20a 21
Ohio and Pennsylvania X	16a 17
Ohio and Pennsylvania XX	18a 19
Ohio and Pennsylvania XX and above	18a 20
Michigan X	15a ..
Michigan No. 1	18 a..
Combing No. 1	18 a19
Combing No. 2	20 a21
Kentucky and Ind. ¼-blood combing	20 a21
Kentucky and Ind. ½-blood combing	15 a16
Missouri ¼-blood combing	13 a16
Missouri ½-blood combing	13 a16
Delaine, Ohio fine	15 a16
Delaine, Michigan fine	20 a
Montana fine	17 a18
Montana medium	7 a10
Wyoming fine	8 a12
Wyoming medium	7 a12
Kansas and Nebraska fine	7 a13
Kansas and Nebraska medium	7 a 9
Georgia	5 a10
Texas spring medium, 12 mos	14 a15
Texas spring fine, 12 mos	9a12
Texas spring fine, 6 to 8 mos	9 a11
Texas spring medium, 6 to 8 mos	8 a10
Texas fall	8 a11
Kentucky ¼-blood clothing	7 a 8
Kentucky ½-blood clothing	14 a15
Unwashed fine Ohio and Michigan	14 a15
Unmerchantable Ohio	12 a13
Unmerchantable Michigan	13 a14
Lamis super pulled	12 a13
Super pulled	12 a13
Extra pulled	9 a13
Western super	8 a15
California spring	8 a12
California fall	9 a13
Oregon east	8 a10
Oregon fancy	8 a12
Oregon fine valley	9 a11
Oregon medium valley	10 a12
Montevideo	14 a16
Australian, Port Philip	20 a24
" Adelaide	19 a20
New Zealand clothing	20 a24
" cross-bred fine	22 a24
Cape	10 a17
Carpet wools, Aleppo	9 a10
" Bagdad	13 a16
" China	7 a13
" Cordova	11a12½
" Donskoi	11 a15
" Donskoi combing	15 a17
" East India	7 a11
" Georgian	9 a13
" Khorassan	10 a16
" Valparaiso	10 a11

NEW YORK, Oct. 24—The market is reported rather quiet. Domestic growths are held steadily and are not urged for sale, and in many instances buyers have been called upon to pay advance on rates for which the same parcels were offered a month ago. The best premise appears to be for medium and fine medium wools, Territories in particular, and the best lots of these are indifferently offered. The largest bunch sale this week was in pulled wools, with further lots under treaty at the close, and sellers say they have no fault to find with prices obtained. There has been a little demand for foreign fine wool, without changing the status of the market. Buyers exhibited no speculative inclination whatever, and simply waited for supplies because they needed them, but most of them when reaching the market were reasonably well disposed to go ahead with negotiations whenever they could do so upon former basis of valuations. As noted previously, there are few attractive Australian and South American wools at present being offered, with most of the holdings in good hands.

PHILADELPHIA, Oct. 24.—The market during the last week has been quieter, as a natural sequence of the large withdrawals of wool and the advancing views of sellers. Prices are firm, but it is difficult to get buyers who had recently bought largely at bottom rates to accede to holders' demands for 1c. or more advance. In occasional instances actual business has been done at just over early September figures, but as a rule the large buyers have declined to advance their bids. They would operate freely at old minimum prices, however, and many offers have been turned down in consequence of the refusal of consignees to accept figures at which they sold a month ago. Shippers have very generally ordered their wools held until after the elections.

The American Congress of Liberal Religious Societies.

This organization, of which Dr. H. W. Thomas, of Chicago, is President, Col. T. W. Higginson, Drs. Hirsch, Savage, Heber, Newton, and William M. Salter, are Vice-Presidents, and Jenkin Lloyd Jones, of Chicago, Secretary, will hold its third annual meeting in Plymouth Church, Indianapolis, November 17, 18 and 19. Rev. Philip S. Moxon, of Springfield, Mass., will preach the opening sermon. Among other speakers are Edwin B. Mead, of Boston; Revs. Reed Stuart, of Detroit; William C. Gannett, of Rochester; Drs. Hirsch, Canfield, and Thomas, of Chicago; Dr. Rexford, of Columbus, O., and many other prominent representatives of various denominations. The Congress is a direct outcome of the Parliament spirit, the initiatory step being taken during that meeting. It is an attempt to ameliorate dogmatism and to minimize the sectarian divisions in communities. Further notice of program and meeting will be duly published.

American Wool Sold in England.

United States Consul Meeker, at Bradford, reports to the State Department that over 1,000,000 pounds of American wool was sold in England early in the Autumn, at an average price of nine cents per pound, and that these sales would have continued except for the advance in freight rates and stiffer prices at home, so that there are still large amounts held for sale in England, awaiting higher prices. Complaint is made of the quality of this wool, which is of the merino short staple type, and buyers complain that the Boston shippers selected the very worst they had to send over. British merchants, Mr. Meeker says, advise American wool buyers, if they hope to keep place in the British market, to educate the growers, through agricultural papers, so that they may bring their wool to market in better condition.

A Great Success.

EDITOR AMERICAN FARMER: Our Fair—the Island County Horticultural, Agricultural, and Industrial Fair—held at Coupeville, Wash., Sept. 8–10, was a great success, including every feature. After paying all the bills we had a fund large enough to pay for the buildings. Wishing you great success—A. J. M. HOSOM, Member State Board of Horticulture.

NEW PUBLICATIONS.

POTATO CULTURE ON THE ISLAND OF Jersey. By Rev. Chas. D. Merrill. Published by A. I. Root Company, Medina, O.

A little manual pamphlet giving an interesting account of intensive culture practiced by the farmers of Jersey.

Notes.

Since the reduction of its selling price to five cents a number, *The Monthly Illustrator and Home and Country* is gaining a very wide circulation. Nowhere else is so much good matter and so many fine pictures offered for so little money. Published at 66 Center street, New York.

Only a few remain who can recall the marvelous enthusiasm which attended Jenny Lind's first appearance in America, in the old Castle Garden, in 1850. When she arrived from England 50,000 people were at the dock to greet her. That night 30,000 people serenaded her in front of her hotel. Seats for her concert sold at fabulous prices. On the night of her first American concert over 5,000 people had gathered in the Battery before Castle Garden by six o'clock, although the concert did not begin until eight. When the doors were opened the crush was terrible, and within 15 minutes every available inch of room, other than the reserved seats, was occupied, and 10,000 people were outside unable to get in. Then every row boat, sailboat and steamer which could be pressed into service was engaged to lay in the water by the old Garden Hall crowded with people who could only hear the strains of Jenny's voice as it floated through the opened windows. The whole scene has now been repictured by Hon. A. Oakey Hall, ex-Mayor of New York City, and he gives a wonderfully graphic recital of the event in the November *Ladies' Home Journal*. The actual scene of Jenny Lind singing her first song to her wonderful audience of thousands is shown in a picture copied by De Thulstrup from a photograph made at the time.

Good Housekeeping, a magazine for women who want to make the very best of their homes. Published at Springfield, Mass. Price $2 a year.

Catalog of Paul Reuss, Artern, Saxony, "Reform" steam apparatus for farm purposes.

THE GARDEN.

Pluckings.

Manure the asparagus bed this Fall; that plant is to good an early Spring food to be neglected.

As a precaution against the striped cucumber bugs next year, rake off and burn all the rubbish on the patch.

Deep cultivation hastens the maturity of cabbage plants. Mulching tends to increase the size of the heads. The largest heads usually come from large seeds.

The standard varieties of strawberries recommended by the Maine Station are Bubach, Crescent, Haverland, Sharpless and Warfield, with Beder Wood or Michels for very early.

Those roses which are to be left in the ground over Winter need some protection. A light covering of leaves, held in place by evergreen-boughs, is probably as good as anything.

There are some advantages in propagating your own plants. You can continue the varieties that do best in your particular locality and soil. You can transplant them as soon as your ground is properly prepared. You can use more care in transplanting and fill in the missing hills at leisure.

To manage a strawberry field well, divide it into thirds. One bed will be new, upon which to rely for the main crop; one old, from which to get what one can; the other set to new berries. As soon as the old bed has got through bearing, plow it up and set it to cabbages or some other crop which must be closely cultivated.

Seeds of annuals, like the poppy and petunia, may be sown in November, and be ready to come up early in Spring. Any annual which self-sows may be sown now with a good prospect of success. There is a long list of these, including the phlox, verbena, calliopsis, portulaca, snow-on-the-mountain, antirrhinum, and others.

In laying plants down (the rows running north and south), commence at the north end, remove the dirt from the north side of the hill about four inches deep; gather the branches in close form with a wide fork, raising it toward the top of the bush, and press gently to the north, at the same time placing the foot firmly on the base of the hill, pressing hard towards the north.

Bulbs need a well-drained, mellow spot in a rather sunny place. Only well-rotted manure should be used in enriching it. They should not be pressed down into the earth, as is so natural when one plants anything of the kind, but should be placed in holes three or four inches deep and the soil filled in around them. The November planted bulbs will be benefited even more than those which were planted earlier by a covering of rotted manure over the bed.

Thayer's Berry Bulletin for November.

For several successive seasons disappointments have come to the growers of small fruits.

Frosts and drouths have ruined the crop in some localities, while large production, unequal distribution and low prices have been equally discouraging in others.

Soil, location, cultivation and mulching are all important factors in guarding against drouth. Results should be carefully noted.

Over-production is practically impossible for many years to come, if distribution can be made more uniform.

The great study should be not only to produce best fruit, but so distribute it that all may have some and none too much.

The great cities are often glutted with inferior fruit, carelessly picked, poorly packed and roughly handled, making reshipment to small towns and cities an impossibility. While this may result in good pay for the transportation companies, it leaves small profits for the commission man and certain loss for the producer.

Growers should understand that it costs just as much to pick, pack, transport and sell poor fruit as good; good fruit in a fair market is sure to pay well, while poor fruit in any market is almost certain to return a loss.

The remedy is in giving more care to all the details of production and working for better markets in the smaller towns and cities.

Many good local markets are entirely overlooked in the mad rush of shipment to the larger cities. Near local markets are often best; study them well.

The proper distribution of small fruits will not be complete until special refrigerator cars are placed on all lines from which sales can be made at any point, the same as meats at the present time.

Better methods of distribution would lessen cost to consumer and largely increase the demand.

Fruits would then be considered a necessity with other food, not a luxury for occasional use.

The universal consumption of fruit means the employment of millions of women and children in a pleasant occupation; it means the most perfect combination of the useful and beautiful in the common walks of life, a stimulant to better health, higher thought and deeper interest in rural pursuits.

With a growing demand, promising a larger consumption, we will next consider, Who shall grow small fruits.—M. A. THAYER, Sparta, Wis.

Formalin for Potato Scab.

The Indiana Experiment Station has probably found a new substance to treat seed potatoes with to kill scab germs that may be on the tubers. It is known as formalin. The advantage is that it is not in the least poisonous. They have, or will soon issue, a bulletin on the subject. They kindly furnished me some to try this year, and so far as I can tell from one season's use, it is as effectual as corrosive sublimate. Formalin comes in pound bottles. It is a colorless and perfectly harmless liquid. Add one-half pint of this (40 per cent. strength) to 15 gallons of water, and soak seed in it for two hours, then cut and plant.

EVAPORATED RASPBERRIES.

A Large Industry in Western New York.

About 1,500 tons of evaporated raspberries are marketed each year from western New York, 1,000 tons being produced in Wayne County alone. The drying of raspberries was first begun in 1868. Five different types of evaporators are used. Kilns, horizontal driers, towers, steam-tray evaporators, and air-blast evaporators.

The kilns consist of slatted floors under which hot air or smoke-pipes or steam-pipes are conducted, and are chiefly used because of their cheapness, for the quality of their product is uneven and not high.

Horizontal evaporators, in which the trays of fruit are moved horizontally or obliquely across the heating surface, are only used by a few.

The tower or stack evaporator in various forms is the style chiefly used in the State, and is recommended. The preferable style is a chimney-like structure of brick resting in the basement of a building and extending up through the roof, with a coal or wood furnace in the base. The heated air rises through the shaft, drying the fruit as it rises, and carrying the vapors into the outside atmosphere. The fruit is spread on trays, usually about 49 inches square, which are put into the stack from the first story and gradually raised by some handy lifter, new trays of fruit being continually added from below. The heat in the stack is about 200° F. at the bottom and about 100° at the top. An average stack about 40 feet high holds 25 trays of 16 quarts each. Trays of fresh berries are inserted every 10 minutes and thus discharged with the berries practically dried in about four hours. The bottoms of the trays consist of wire screen of about one-quarter inch mesh. A little over three quarts, or four pounds, of fresh blackcaps are required to make one pound of marketable product under ordinary conditions. After the berries are removed from the trays, they are piled several inches deep in a warm, airy room and allowed to cure for a few weeks, being turned several times during that period. They may then be packed in barrels, 125 pounds to the barrel. The price for the dried fruit averages about 16 to 17 cents a pound.

This is about the time of the year when people are thinking about sawing their season wood. The best way to saw it is with the Folding Sawing Machine, made by the Folding Sawing Machine Co., Chicago, Ill. One man can operate it and accomplish the work of two. It saws down trees and can be instantly adjusted to five different positions, and for the benefit of those who are interested, we illustrate it in one position below. Investigate its merits before sawing your wood.

Effects of Different Manures on Pastures.

The Highland and Agricultural Society of Scotland has been experimenting on the value of different kinds of fertilizers on pastures, as shown by the liking of the cattle and horses for the food.

Among the phosphate plats, those to which bonemeal had been applied produced good grass and abundant clover, and were among the freshest, greenest, and most closely eaten plats under observation. The stock did not like the grass, though good, on the plats receiving ground mineral phosphate or phosphate. On the plat manured exclusively with phosphate was a uniform sward of stunted growth, but well eaten.

In the nitrogen section the plat receiving nitrate of soda grew little clover and was avoided by the stock. The plat with sulphate of ammonia had more clover and was better eaten. The plats with horn dust and dried blood were thrifty in appearance and closely eaten. The plat with no nitrogen was fairly well covered, especially with clover, and was well eaten. The plat with nitrate of soda alone grew little grass, almost no clover, and was not touched by the stock until late in the season.

The plat receiving fish guano surpassed those with bone meal, was closely grown with grass and clover, and cropped very short. On the plats with ammonium sulphate and sodium nitrate "the larger the dose of soluble nitrogenous manure the coarser the grass and the less the clover." Where these applications were heavy the soil grew very patchy and tufty grass of a coarse kind.

The plat receiving gypsum was well grown with grass and clover, which were relished by the stock. On the plats manured in 1894 gypsum did better than lime. There was a large proportion of clover on the plat receiving kainit, and the herbage was cropped close. Ferrous sulphate was beneficial when applied with gypsum or slag, but injurious with lime. Nitrate of soda, applied at the end of April, was injurious, especially when used on the plats receiving ferrous sulphate.

A NEW HOPE.

The Future of Dairying in South Dakota.

BY JOHN M. TRUEMAN, B. S.,
Assistant Professor in Dairying, South Dakota Agricultural College.

[Read before the South Dakota Dairy Convention.]

In days of old the preparation of a new farm for cultivation called for many months of exhausting labor. Great trees had to be cut down and burned; their stumps, that clung with a mighty grip to their native soil, had literally to be torn from their resting places; heavy stones had to be pried from their sockets and laboriously dragged to out-of-the-way places; cart-load after cart-load of smaller stones had to be picked from the fields and dumped into ravines, or be built into long, gray lines of fence. If excess of water had killed the trees and alluvial deposits had buried the stones, still, the water must be removed before its work could be of any benefit to the farmer. This meant still harder work and greater expense in digging long and deep ditches. By the time, therefore, that a man had cleared up his farm and begun to feel independent, hard work had bent his frame and much care had whitened his head.

HOW DIFFERENT FROM ALL THIS

was the prospect before the settlers in Dakota, as they looked across the gray, rolling prairies and realized that neither tree nor stone were there to hinder the plowman as he drove his horses from early morn to late at night over the hitherto-unbroken sod. And not only that, but the rich, black soil below the waving grass contained quantities of plant food far in excess of that possessed by the soil won by so much labor from the trees and stone in the East. Even now, as we recall these facts, we can almost feel again the bounding pulse and quick exhilaration that came to us as we first looked upon the pleasing prospect; and we cease to wonder that the men who were being crowded to the wall in the once-filled communities of older settlements saw an El Dorado in the prairies of the West and hastened to secure for themselves a home within its borders.

The success of the first few years was phenomenal. Sunshine and rain, heat and cold, seemed to work together in delightful harmony in order to fulfill the hopes of the people. Enormous crops of golden grain that sold for golden prices excited the envy and admiration of all, and caused thousands of people to hasten to the charmed place where they believed wealth could be obtained with little labor and by any person. But this was not to last; the sudden failure of the crops from excessive drouth brought business almost to a standstill. The excitement of early days and the plentifulness of money had induced a recklessness in living that not only hindered the people from saving money, but kept them from paying their just debts. When a drop of over 100 per cent. in the price of wheat followed the failure of the crops, the last prop seemed to be knocked from beneath the farmer, and the hopeful prospect of former days was changed to one of uncertainty and gloom.

HOPEFUL WESTERN MEN.

But the people had come to the West full of hope, and it was hard to crush it out completely. They constantly hoped for better times, and tried various schemes to relieve themselves of the oppressive burdens of debt they were carrying.

One scheme was to set free the water imprisoned far below the surface of the earth. The stinginess of nature in withholding the rain-cloud was to be compensated for by her prodigality in supplying the rivers of water that flowed from the artesian well.

The difficulties to be overcome, however, in getting satisfactory wells, and in making a practical application of artesian water to growing crops, together with the comparatively small area of the artesian basin, soon made it apparent that the great majority of land owners could hope for no relief from this source.

Others have been led to believe that improved farm machinery was to solve the problem. Improved plows and cultivators and the press-drill have been praised until one would think upon them alone depends the success of all future farm operations. It is safe to assert, however, that no inventive genius can ever give us a machine or set of machinery that will always overcome the changeableness of a Dakota climate.

Still others have laid the cause of the present hard times to the political condition of the country. Extravagance of legislators and bad legislating, according to their story, have nearly brought us to complete ruin. They say give us the free coinage of silver, and all the troubles of life will vanish as by magic; money will be plenty, everybody will be happy, and the country will once more enjoy the glorious times that preceded the perpetration of the monstrous crime of 1873; or, give us protection for our wheat and wool, and a gold money basis, and the farmer's income will increase so rapidly that he will quickly forget the hard times of the past few years and glory in the prospect of immediate wealth.

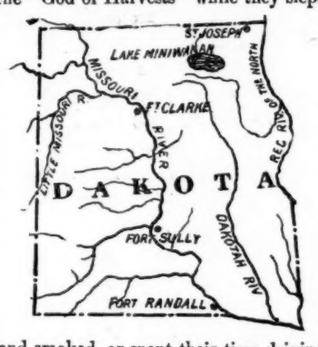
Thus they talk, while all forget that

NO SET OF LEGISLATORS

can bring prosperity to any agricultural country unless the farmers use industry, honesty, and intelligence in all their work.

Notwithstanding these repeated failures a "new hope" is springing up in the hearts of the people, showing itself in brighter faces and renewed confidence in the country. A movement has been started that rests upon a reasonable basis, and is eventually to change from beginning to end our methods of farming. In this radical change of farming methods lies the great value of the dairy industry to the State of South Dakota. In order to prove this assertion it will be necessary to review briefly the causes for our past failure.

In the beginning of this paper I made the statement that the people who first settled in this country thought they had found an El Dorado—a charmed place where success came to all in return for little work. In harmony with this idea they were content to work a few weeks in the Spring while getting seed into the ground, and then leave it to the care of the "God of Harvests" while they slept



and smoked, or spent their time driving back and forth from their farms to town, loafing with each other in the grocery, or even the saloon, and branding themselves with careless and indolent habits, to bequeath as their only legacy to the generation that should call them father. As we think of the degenerating influence of idleness, and the lack of a stimulant to mental or moral growth in such a life, we cease to wonder that the God of nature has withheld his rain-cloud and is forcing the people to think and work.

THE REAL CAUSE

of our failure and indebtedness is not the drouth, but is found in the fact that men have neglected to use the mental powers they possessed in devising ways and means to earn a livelihood.

But you may ask me why I bring these facts to your remembrance, and say that you know them all from bitter experience. I bring it before you because I want the farmers of South Dakota to see the matter from beginning to end, and to realize that we are not here to speculate in wheat, with the hope of amassing a fortune that will enable us to spend our old age in other lands, but for the purpose of building up a permanent Commonwealth of honest, industrious, God-fearing men and women, who shall cause the State of South Dakota to stand in the front rank among the proudest States of the greatest Republic the world has ever seen.

THE DAIRY INDUSTRY

is introducing the change in methods that will surely bring about this happy result. The farmer will no longer be compelled to sit idle month after month, but every day in the year he will have an opportunity to work from early morning until night.

Herein lies one of the secrets of the success of the dairy farmer. But some object to working every day, and complain of the confinement and drudgery of milking.

Then, in the name of common sense, cease complaining about hard times and the scarcity of money. How does the banker make his money? By driving around the country and talking politics to every man he meets? Not at all; but by constantly tending to his business. Day after day, year after year, he grinds away at his desk. How does the physician get and keep his large and paying practice? By being ready night or day to answer the call of the sick. He cannot leave his patients to do his own pleasure, but is confined to a beaten track from one year's end to another.

Everywhere, then, in the office, in the bank, or in the pulpit, success comes only as the reward of constant, earnest work. Can the farmer hope to succeed with less than this? Must others walk the treadmill of confinement and he alone be free? Plainly comes the answer, No; he must be willing to pay the price of success, remembering the words of the wisest of men, "The hand of the diligent maketh rich." Financial success is not the only good that will come to farmers of South Dakota from the changed methods of farming. We forget in our headlong rush for wealth that "Life is more than meat, and the body more than raiment." Growing one crop, and only one, has a tendency to make a man narrow in his thought and life. His interests are confined within too small a compass; every question of public or private importance interests him only so far as it affects the price of wheat. On the other hand, the dairy industry, with its necessary accompaniments of grain raising, fodder growing, and stock breeding, widens a man's interest in the world, makes him think and study, and starts him along a line of development that will not only make him a more successful farmer, but also a better and more useful citizen.

WILL IT BE SAFE,

then, for every farmer to begin buying cows at once, and every community to build a creamery? Are there no dangers to be avoided in taking up this new work? We need only point to closed doors and rotting foundations of the many creameries in this State to prove that here, as well as elsewhere, it is easy to make mistakes. Men who think there is a charm in the word creamery that of itself will turn any kind of milk into first-class butter, or pay the expenses of an outfit that cost a thousand dollars more than it is worth, and is operated by a butter maker who does not understand the foundation principles of his business, will be as badly disappointed with their attempt at butter making as they were with their speculation in wheat. On the other hand, the best butter maker in existence, equipped with a model creamery, can never make high-grade butter from the milk sent him by the patron whose only care is to get credit for as many pounds as possible, and who secretly hopes that the dirt he carelessly lets fall into his milk will add to its return.

There is danger, then, of failure, but it may be avoided if an honest, faithful effort is made by all concerned to do the best they can. The farmer who is most successful in dairying will treat his cows as if he loved them. He will never use their tails as rudders by which to steer them in the right direction, nor will he kick them in the ribs, nor pound them with a milking-stool after he has them tied because they did not hurry to their stalls. He will not leave them shivering in the north wind after making them drink ice water, or try experiments to see how little food it takes to keep a cow alive. Thus, some successful dairyman will not be filled with such high and mighty notions of his own importance as to think it a disgrace to milk his own cows. Many who are carrying heavy burdens of debt tell me they will let the Sheriff sell them out before they will take up the humble drudgery of milking. My faith in the declarations of such men, that they wish to pay their debts and "provide things honest in the sight of all men," I confes is very weak. Farmers will debase themselves by swearing, drinking and loafing, and then if advised to go into dairying will draw themselves up proudly and tell you when they get as low as that they will be ready to step out.

I WOULD LIKE TO SAY

to every man in South Dakota that the ability to milk a cow properly is something to be proud of, and that I remember as among the happiest days of my life the time when I drove the lazy-footed cows from the clover pastures on my father's farm to the light and airy barn and milked from their well-filled udders pail after pail of the snow-white milk.

In closing, then, I would encourage the farmers of South Dakota to make a firm stand for honest, industrious farming. In a country where food is exceedingly cheap and the climate all that can be desired, the dairy industry is bound to pay better than all others. The farmer envies the prices paid to skilled labor. Let him become a skilled laborer himself. Every additional amount of energy and brain that he adds to the products of his farm should increase his profits. Instead of selling grain as raw material, feed it to your cattle and add to your skill as a grain-grower your skill as a feeder; add to this your skill as a breeder of choice dairy cows, and then on top of all put your skill as a butter and cheese-maker. Every time you change the form of your product and reduce its bulk, you add to its value and increase your profits. Let the farmers of this State give up the idea that a humdrum life is their everlasting portion, and take their rightful place among the skilled laborers of the world.

This will bring to them not only prosperity, but happiness and contentment. That which gives the most enjoyment to every true man is work well done. And although there may be many days of hard work, the farmer will count it as nothing when he sees his debts paid, his home filled with comforts and his wife and children happy.

I see before me in the land of the Dakotas a picture of thriving towns and happy homesteads, a land flowing with milk and honey, and peopled by a race of earnest, working men and women upon whom rests the blessing of the great All-Father.

Do not forget THE AMERICAN FARMER when providing for your Winter reading. Nowhere else can you get so much good reading matter for so little money.

Working Girls

Willing, Able, and Ambitious.

But Often Held Back by an Illness They Do Not Understand.

A YOUNG and intelligent working-girl of Brooklyn, N.Y., graphically pictures the working-girl's life. Day in and day out, month after month, she toils. She is the bread-winner of the family, and must work that others may live. Rain or shine, warm or cold, she must get to her place of employment sharp on time. With the sunshine and gladness all crushed out of her life, she goes on until she falls.

Oh! this pictures only one of thousands. Some work in cramped positions, but the great majority of working-girls, so to speak, live on their feet.

Among the latter the symptoms of female diseases are early manifested by weak and aching backs, pains in the lower limbs and lower part of the stomach. The "monthly period" is irregular: with some profuse, with others a cessation. Other symptoms are present, faintness, weakness, loss of appetite and sleep. She may be sure that a womb trouble assails her.

Miss Mary Smylie, of 2078 Susquehanna Avenue, Kensington, Philadelphia, Pa., urges her fellow working-girls to have faith in *Lydia E. Pinkham's* Vegetable Compound. She says: "I am a working-girl, and must stand eleven hours every day. I have suffered terribly from painful menstruation and kidney trouble; and my head was so dizzy I could hardly see. I began to take your Lydia Pinkham's Compound some time ago. It was highly recommended to me by a friend. Now I feel like a different girl; no more aches and pains. I am praising it to every one. Our Druggist sells lots of it."

Lydia E. Pinkham Med. Co., Lynn, Mass.

CANNED BEEF EXCLUDED.

Germany Increases Her Stringent Regulations on American Cattle.

According to unofficial, though trustworthy, information received at the Department of Agriculture, the German Government has followed up its prohibition of the importation of American dressed beef and live cattle into Germany by a regulation which practically shuts out American canned beef from the German markets. Canned beef was not included in the first proscription, and considerable quantities of it continued to be sent to the German ports. Recently, however, a new order was issued, requiring that all canned beef should be inspected. As compliance with this requirement means the opening of cans containing the meat, the order is a practical inhibition.

The Agricultural Department has no information of any investigation on the part of the German Government as to the presence of tuberculosis in American cattle, but Dr. Salmon, Chief of the Bureau of Animal Industry, says that if such an investigation should be set on foot, it might mean that Germany was somewhat more disposed than she has been to consider the protests of this Government against her treatment of our beef product. The matter has been the subject for a long correspondence, conducted on behalf of this Government by the State Department, thus far without any apparent disposition on the part of Germany to yield.

Churning Done in Two Minutes.

I have tried the Lightning Churn you recently described in your paper, and it is certainly a wonder. I can churn in less than two minutes, and the butter is elegant, and you get considerable more butter than when you use a common churn. I took the agency for the churn here and every butter maker that sees it buys one. I have sold three dozen and they give the best of satisfaction. I know I can sell 100 in this township, as they churn so quickly, make so much more butter than common churns and are so cheap. Some one in every township can make $200 or $300 selling these churns. By writing to W. H. Baird & Co., 140 S. Highland Ave., Station A, Pittsburgh, Pa., you can get circulars and full information, so you can make big money right at home. I have made $80 in the past two weeks and I never sold anything before in my life. A FARMER.

When writing mention this paper.

A WATCH GIVEN AWAY TO EVERYBODY.

A Premium Offer that Breaks the Record.

READ CAREFULLY OUR OFFER BELOW.

Every Word of the Statement is Absolutely True, Though Hard to Believe.

Think of It! A Stem-Wind and Stem-Set Watch Guaranteed a Perfect Timekeeper that Will Not Cost a Cent.

We have secured for our friends one of the most serviceable watches ever made, which is a stem-winder and stem-setter having all the modern appliances known to the watchmaker's art. The case is **solid gilt** or **nickel**, according to choice. It is two inches in diameter and three-quarters of an inch thick. The cut shows the correct shape. Remember this is no toy nor sun dial, but an ordinary modern watch which will last for years, and one which any person may be proud to carry in his vest pocket. It is guaranteed by the manufacturer, and if not found exactly as represented this guarantee is assumed by us. A watch like this a generation ago would have cost $20, even if it could have been produced, but the fact is it contains appliances unknown at that time.

In addition to the watch we send in every instance a neat and serviceable chain, so that the outfit will be ready to put on and wear as soon as received.

HOW TO GET IT.

We do not sell this watch without the paper, and no one can secure one of these splendid timepieces by itself.

We will send this watch by mail to any person who will send us a

CLUB OF ONLY TEN YEARLY SUBSCRIBERS

to THE AMERICAN FARMER.

Understand that you pay nothing for the watch, but send us ten names and addresses of subscribers to THE AMERICAN FARMER with 25 cents for each subscriber, who will receive the paper for one year, postpaid, and we will send you the above-described watch and chain, postpaid, to your address absolutely free of charge.

No one, therefore, need be without a watch equal for keeping time to any in the neighborhood a single day longer. Indeed, it will not take a day for anyone to get up this small club of only ten subscribers at 25 cents each for the best family newspaper in the United States.

Try it, and see for yourself how easy it is.

If anyone is unwilling to spare even the little time required to get up the club, we will send the watch and chain with THE AMERICAN FARMER for one year to any address for $1.75.

REMEMBER

that we do not care to dispose of the watch with single subscribers, but our object in this unparalleled offer is to give the watch free to our friends who will raise the clubs of ten, because we want THE AMERICAN FARMER to go for the coming year into every farmer's home in the country. To accomplish this we are willing to make the sacrifice which this offer entails.

DO NOT LOSE TIME,

but attend to this matter the very next day after you receive this offer.

THE AMERICAN FARMER, Washington, D. C.

Scott's Emulsion

of Cod-liver Oil, with Hypophosphites

acts as a brake to declining life. The downward course ceases and the new lease begins. At the top awaits a climb upwards of life.

Prompt action brings prompt results.

50c. and $1.00 at all druggists

The Conqueror.

I saw an Angel with majestic mien
And radiant brow, and smile divinely sweet;
Strong humam passions writhed beneath his feet.
There too expired those coward faults which screen
Themselves behind Inheritance, and lean
On dead men for their strength, and think it meet.
All, all lay prostrate, owning their defeat.
Then to the spirit with the eyes serene
I cried aloud, in wonder and in awe:
"Oh, mighty One, who art thou, that thy glance
Can circumvent heredity, cheat chance,
And conquer nature? What thine occult law?
Art thou incarnate Force—the Over-soul?"
The Angel answered, "*I am Self-Control*"
—*Ella Wheeler Wilcox, in Harper's Weekly.*

Our Baby.

We have a baby, and he looks like me
Somebody said so one day;
But that I have never been able to see,
Though somebody said so one day.
His beautiful eyes have the hue of the skies
And mine of a ship-tossed sea.
Neither blue, gray, nor green, just betwixt and between,
Still our baby looks like me.

His bright tresses hold the lustre of gold,
Somebody said so one day;
And mine are as straight as the red man's of old,
Somebody said so one day;
His mouth's like a sweet little bursting pink rose,
There's a dimple in each round knee;
He's as fair as the day, the neighbors all say,
Still our baby looks like me.
—*Cy Warman.*

ABOUT WOMEN.

WOMEN RIDE THEIR HOBBIES the world over. Queen Victoria dearly loves a game of whist. Olive Schreiner, the writer, uses up all her enthusiasm on a model dairy, and Ellen Terry is interested in photography.

* * *

THE RED RIBBON OF THE Legion of Honor of France has been for the second time bestowed on a woman. Sister Marie Chantal, Superior of the Hospice-General, Tours, has been so honored for her heroism in caring for wounded soldiers on the battlefields and for her devotion to the sick soldiers in the hospita's. Rosa Bonheur also has this decoration.

* * *

MRS. WARD, THE ENGLISH novelist—familiar to us all through her books, "Marcella," "Robert Elsmere," "David Grieve," and "Sir George Tressady"—has a remarkably quiet, strong face, withal gentle and womanly, if we may believe the photographs of her. She is often compared to George Eliot, though lovers of Adam Bede and Romola will not admit any equality. Certainly Mrs. Ward's writings are true to human nature, deep and noble in purpose and fine in execution. The critics say that one never feels a warm personal sympathy for Marcella, as he always has for Maggie, in "The Mill on the Floss"; but to many of us Marcella is very like a big-souled girl of today, struggling with life's perplexities and doubts, learning the lessons slowly and surely, and blessed with an inexhaustible love for her fellow-beings. Perhaps time will not award Mrs. Ward so high a place in literature as George Eliot's, but in the first enthusiasm over Marcella one is tempted to rank Mrs. Ward's heroine as high as one does Gwendolen Harcourt or Dinah or even Maggie.

FADS AND FANCIES.

Wide, folded belts of silk, satin or velvet are made for every other frock this season. Unfortunately it is not a style becoming to the woman of large proportions, who will have to content herself with the thought that pointed basques are on their way back "In."

* * *

NEW WRAPS.

* * *

Braiding and frogs—in true military style—are to be seen on some of the new coats, on the few tight-fitting ones. Loose-fronted coats, with Watteau pleats or box fronts, are by far in the majority.

* * *

An exceedingly pretty scarf can be made of black flowered chiffon—fichu shaped—with two frills of plain black chiffon all about its edge. Plenty of chiffon must be used, as it is so soft and the scarf must be very fluffy. It should be about a yard and a quarter long and not more than a half yard wide (without the ruffles) in the center where the fichu is widest. Such a scarf is pretty for an elderly woman or for a blonde who is fond of wearing black—or it is pretty copied in white or pale colors, for the younger women. It is only a makeshift as a wrap—it may perhaps protect the throat a little from cool breezes, but its main purpose is to be pretty and fluffy rather than to serve as a wrap.

It seems that the Worth establishment is sending out a few gowns with panniered skirts. Now let no deluded woman think therefore that she had best make up her new frock with panniers—for a change. Little panniers, over the hips, like those worn by Dresden shepherdesses are most charming, and Worth can probably make a pannier "set" very prettily—but the average dressmaker bungles panniers into hopeless fussiness and awkwardness, and the average woman has not the slim-hipped figure necessary to wear panniers gracefully. The woman who is wise will let the Dresden shepherdesses and the dames who can buy Worth frocks wear the panniers while she sticks to the plain skirts.

* * *

A WHITE WOOL GOWN.

* * *

Black satin is very stylish for dress-trimmings.

* * *

One woman has a scheme for covering the top of her writing-table with a square of black velvet. She claims it does not show ink, papers cling to it, and are not always slipping away, and letters, stamps and papers show well on it.

* * *

The new jackets this Fall are all loose-fronted.

* * *

THE BOLERO JACKET.

* * *

Red is a favorite Autumn color. A russet-brown coat and skirt with a red waistcoat makes a charming costume for these days of falling leaves and hazy skies.

HERE AND THERE.

The Americans are always being criticised for saying "Popper" and "Mommer," for Papa and Mama. "Popper" is certainly not pretty, nor is "Paw" nor "Pah," some of the other pet forms of the same title. The most stylish form of these titles is undoubtedly Pa-pâ, or Ma-ma, with the accent on the last syllable. Webster accents the words either on the first or second syllable, so there is really no special reason why this form, so beloved by aristocratic mothers, should prevail. Some folks claim that when the word is pronounced with the accent on the last syllable it is more musical in sound—which is a matter of taste. Most of us like better the old familiar way of speaking it, with no accent, or but a slight one, on the first syllable. The terms Father and Mother are dignified, old-fashioned and dear to us all, but the little children seem to like and need the pet forms—"Papa" and "Mamma."

* * *

Clean mutton suet, tried out at home, moulded and wrapped in tinfoil, will keep a long time and is most desirable for the home medicine chest. It will help to heal burns, scratches and bruises, and is excellent for chapped hands and lips. Camphor ice can be made by putting a piece of camphor gum the size of a walnut into a half cup of melted mutton tallow and heating them until the camphor is entirely melted. While this is hot it can be poured into any tiny jar, salve box, or wide-mouthed bottle, and when it is cool will be ready for the toilet table.

* * *

A great many women believe that the best thing to clean oilcloth with is skim milk.

A stubborn glass stopper can usually be moved with the aid of heat. Light a match and hold the flame against the neck of the bottle, or let hot water run on it, not boiling water, that will break the glass, but generously hot water. The idea is that the heat expands the neck of the bottle and allows the cork to come out quite easily.

* * *

Small-patterned wall-papers and carpets help to tastefully furnish small or medium-sized rooms. Large patterns for the floor or wall covering of a small room are highly uncomfortable.

* * *

The dining-room should be aired for five or 10 minutes after each and every meal.

* * *

Try boiling potatoes in their jackets and then put them in the oven for a moment or two to dry before serving.

* * *

Hot milk is twice as good as cold milk for serving with the breakfast coffee, and there are people who like the hot milk more than they do cream.

HOME TABLE.

TOAST.

Toast, we need not say, should be thin, crisp, waterlike, as well as embrowned, fresh, and hot. Thick toast, with solid, fleshy bread between the embrowned surfaces, is a gross and plebeian solecism; for the true intention of toast, its meaning, or raison d'etre, is to extinguish the foody, solid taste which belongs to bread, and to supply in its place crisp, light, fragrant, evanescent, spiritualized chips of fare, the mere scent and sound of which suggest the crisp, pleasant, light chat of easy morning or evening conversation.—*The Spectator.*

POTATOES.

It was three centuries ago that Sir Walter Raleigh took the first potato into Ireland. Erin's sons and daughters will celebrate the anniversary of that important date in November.

VEAL PATTIES.

Two cups chopped veal, one cup mashed potatoes, two eggs, one tablespoonful butter, and salt and pepper to taste. Mix well together and make into flat cakes. Fry quickly in well-larded skillet.

* * *

Beef marrow well cooked in the bone, then taken out, seasoned with salt and lightly with pepper and spread on toast is recommended by physicians as being particularly strengthening.

* * *

Green tomatoes sliced and fried are much liked by some good folks.

* * *

A careful housewife can keep garnishings and seasonings always at hand, by having a little window garden in her kitchen, and she needs nothing more elaborate than old cans and boxes to hold her plants, providing she puts a good deep layer of pebbles in the bottom to provide some sort of drainage. Here she can grow parsley; chives—which are finer in flavor than onions; tarragon—which is a delicious flavoring for vinegar for salads, thyme, sorrel, mint and whatever fine herbs find most favor in her household.

SUGGESTIONS FOR MOTHERS,

Concerning the Tiniest of the Small Mites of Humanity.

We are overwhelmed with advice concerning the management of older children, but what about the tiny infants—the helpless little mites who demand even more thoughtful care? "The baby is so dreadfully cross!" is the complaint of the average young mother of slight experience. "I'll be so glad when it reaches the age of three months, for nurse says there will be a change for the better by that time."

But it's cruel to let that little suffering bit of humanity worry out its first three months of existence in "crossness," when half the time it isn't cross at all, but really in distress because of some neglect in regard to its food or clothing.

If it is a bottle-fed baby perhaps its distress is on account of stomach-ache because of carelessness in cleaning the bottle. This is too often trusted to an inexperienced nurse, when the mother should give it her special supervision. The care of the nursing-bottle is always imperative, in Winter as well as during the trying Summer weather. They must not be neglected after a single using. It is best for the mother to provide herself with at least two bottles, so that one can be undergoing the cleaning process while the other is in use. To make them perfectly sweet, fill with lime water, or water in which a little soda has been dissolved. Also put the glass tube, cork and nipple in water thus prepared. Besides the brushes accompanying the bottle, a good stiff tooth brush should be kept for cleansing the cork. Another thing of great importance is the time of nursing. Do not as a rule feed the baby under three months of age oftener than every two hours; gradually lengthening the interval to three hours, between each feeding. If the child cries, try to soothe it in some other way; you will doubtless only aggravate the trouble by feeding it "between meals." For it is an acknowledged fact that more babies cry from the pains of an overtaxed stomach than from the pangs of hunger.

How about the clothing "comforts"? Is the baby's band soft and loose and comfortable, or has it been allowed to become a tight, rough, stringy affair that is enough to irritate the best-natured baby living? These bands should be made of soft white flannel, measuring four fingers in length and one and one-half in width. In the lower edge take two small darts, making it easier to keep the band in place; turn over a narrow edge all around the band, and "catstitch" it down. This will make a soft, flat band, and one that will not be continually in a string unless pinned so firmly that the poor baby can scarcely breathe. From two to three weeks is usually sufficiently long for the baby to wear this, though in some cases it is desirable to keep it on longer.

The little shirts should receive the next consideration in looking out for the baby's comfort. Do not use the pretty little affairs made of knitted or crocheted saxony. They are comfortable and convenient enough for an older child, but quite unsuited to the tender skin of the baby. Make the first shirts high-necked and long-sleeved, and not too long in the body. Use a good quality of white flannel for them for Winter use, and for Summer use the silk woven ones are preferable, but they are more expensive. However, one can manage very well with but three, for they are tiny and very little trouble to wash. When washing them do not put soap directly on them, but put them through two waters in which soap has been dissolved.

After the shirts come the waists, and for comfort these should be fastened in the front with small flat buttons. They should be made of domestic or cambric, with a deep hem across the bottom, having two rows of buttons, also flat, but somewhat larger than those on the front. These waists will not require trimming, but should be finished with a narrow hem around the neck and armholes.

For foot blankets, and these are very necessary for the small baby's comfort, especially during the Winter months, although they are often overlooked in preparing the wardrobe, take four widths of ordinary white flannel. This will make three, cutting them three-fourths of a yard long. These, as well as the skirts that are to be buttoned on the small waists, for convenient changing without undressing the baby, should be put upon bands an inch deep, and in these bands five buttonholes should be worked, to correspond with the buttons on the waist.

Some young mother may say: "Oh, so many buttonholes! They will take so much time, and I dislike to make them, any way." Yes, they take time, but they will pay, for we are taking into consideration the comfort of the baby, and it certainly will be anything but comfortable to take off the dress every time it is necessary to remove a damp skirt simply because it is easier to have the skirts sewed to the waist instead of fastened with buttons.

Make fewer garments if necessary, or, better still, put in a few less tucks than you intended, and look after the comfort of the clothing before considering the beautifying of the small garments. About those buttonholes—it is a good plan to tear off, fold and baste a number of bands, three or four at a time, and have them to work on at odd moments. Have them for "pick-up" work when calling, or chatting with a neighbor, and before you realize it, the dreaded task will be finished, and when the garments are ready for the bands very few minutes will suffice to finish them.

For comfortable dressing, button the flannel skirts on the lower row of buttons, and the white skirt on the upper row. Until it has been tested you will have no idea how convenient this arrangement is when baby is fussy, and it is necessary to replace a soiled garment with a clean one; for the dress and troublesome sleeves need not be disturbed.

For night wear three good-sized gowns of cotton flannel will be desirable and the night skirts should be made gored and without sleeves (waist and skirt in one piece). If these skirts are made of "shaker flannel" they will not thicken up as all-wool would, and they should be long enough to pin up instead of using foot blankets at night, while baby is small.

For petticoats, slips and gowns, preference is given to cambric; but exceedingly fine gowns are made of mull. The gorgeous robe that is worn when his Majesty assumes a name and first denounces cold water, is of mull, and may be trimmed as much or as little as desired.

For cool-day comfort, soft cashmere in cream, pearl-gray or some other pale shade, is usually chosen for wrappers, and they are much more appropriate than cambric for every-day wear.

Needlework done in silk or linen floss may be lavished upon the flannel skirts, though the little mother will be wise if she have two or three made very simply. Tucks and ruffles of fine Hamburg embroidery and dainty laces are allowed on skirts but the finest layettes now show all garments made with a plainness that is only relieved by fine hand sewing. Do not make the skirts too long; from three-quarters to one yard in length is ample, and in choosing the flannel, medium weight is most desirable for comfort, as it does not drag the little form.—*Philadelphia Times.*

A Giant Rose Tree.

A remarkable rose tree grows in the gardens of Chateau Eleonore, at Cannes, France. It is a specimen of the well-known tea-rose, Marie Van Houthe. This plant, which is only six years old, already measures 67 feet in circumference, and will, if permitted, grow very much larger. This remarkable rosebush is on property owned by Lord Brougham, who attributes its extraordinary dimensions principally to the soil, which consists of rich loam of great depth. This tree is planted on the slope which descends from the chateau to the main road.

The gardens are very beautiful and are noted especially for their tea-roses, of which 150 varieties are grown—unquestionably the finest collection in Europe.

More diseases are produced by using brown and perfumed soaps than by any thing else. Why run such terrible risks when you know Dobbins' Electric Soap is pure and perfect. Dobbins' prevents hands from chapping.

Wood and Moisture.

Microscopical investigation is said to prove that the pores of wood invite the passage of moisture in the direction of the timber's growth, but repel it in the opposite direction, and this is supposed to account for the phenomenon which has been so often noticed and which is so commonly a mystery, namely, the fact of two pieces of timber sawn from the same section of a tree, sometimes appearing to possess very variable degrees of durability. It is found that if the wood, say, of a gate post, is placed right end up the moisture in the soil will affect it, but the rain falling on the top will do little harm; if on the other hand, the butt end of a tree is placed uppermost, the top of the post will decay, because the moisture of the atmosphere will penetrate the pores of the wood more rapidly in such a position. The fact, so familiar, that the staves of a wooden tub appear to absorb moisture irregularly—some getting quite sodden while others are comparatively dry and seemingly almost impervious to moisture—is because the dry staves are in position as the tree grew, but the saturated ones are reversed.

STRAWS.

Six-legged black beetles, a new pest in that locality, have done much damage to the watermelon crop in Sacramento County, Cal.

An error of a thousandth part of a second in an astronomical calculation would mean a difference of 200,000,000,000 miles in the distance of a star.

The Egyptian cotton crop promises to be the largest ever known. It is estimated that it will amount to 6,000,000 cantars, or 570,000,000 pounds.

In the Portsmouth (O.) jail are a father charged with stealing a hive of bees, and two of his sons, one accused of having stolen timber, and the other of stealing a load of wheat.

Do not forget THE AMERICAN FARMER when providing for your Winter reading. Nowhere else can you get so much good reading matter for so little money.

PRATCIGAL EDUCATION.

Teach Agriculture in the Public Schools.

BY J. H. PEACHY, BELLEVILLE, PA.

[Read at Farmers' Institute, Lewistown, Pa.]

In this age of advanced thought the people in general appreciate the value of education. Their judgment is influenced by their enviroments. Their estimation of the real value of education is proportionate to their knowledge. Viewed from different standpoints other conclusions are formed. Herein arise the diversity of opinion as to what should constitute a course of study for the common schools.

Old theories are not easily set aside. The custom and opinion of older people are, as a rule, changed with great difficulty. Progress along the various lines seem slow, until the people are taught to appreciate the value of the change. Agitation, antagonism, deliberation and honest inquiry are among the mighty forces that move the world of thought.

Along this line the agricultural press, freighted with the living thoughts of eminent thinkers, is working a change in the agricultural interests of the country. Farmers' Institutes are doing a noble work in disseminating knowledge pertaining to agriculture. Experiment Stations are supplanting the rule of guess by actual tests. Agricultural Colleges conducted by efficient educators are training young men in a business-like manner for the most useful of all occupations. These are the important factors in the solution of the great problem of Agriculture. Farmers are reading more than formerly, consequently thinking more also. This, in part, is caused by the depressed condition of their business. They realize the growing importance of a more thorough understanding of the real issues that affect their true interests. Along the whole line of agricultural pursuit, there is a general awakening. What but education, either in or out of school, has produced the change in thought? What but education can further advance the true interest of the agriculturist? This however, is not enough. Farmers' sons and daughters should be taught in school that which they will practice in active life. Instruct them in the branches that pertain to their prospective business. It is not possible for all of them to attend agricultural colleges, hence the public schools—the university of the masses—affords the only opportunity. Inasmuch as the great majority of farmers' sons and daughters never get beyond the public schools, they should be adapted to their wants; otherwise their business interests must suffer irreparable loses for want of proper culture.

Such is the condition of affairs to-day, from the fact that country schools do not prepare country children for country life. This may seem rather a sweeping declaration, but true nevertheless. Let us inquire whether or not there is any truth in the statement.

Does the average boy on quitting the public schools know the forms and principles of book-keeping? Can he keep farm accounts in a systematic manner? Does he know anything concerning the formation and composition of the soil? Has he any knowledge of the germination and growth of the seed, plant life, plant food, and its sources? Does he know the function of the roots and leaves of the plant? Can he tell why one crop will fertilize the soil, and another rob it of its fertility? Does he have any idea of the chemical action of sun and air upon the soil?

But some one says, that is not the purpose of the free-school system; that it has for its object something higher than the dissemination of knowledge pertaining to agriculture. Would it be a greater violation of the free-school system to prepare farmers for their work than to prepare teachers? We know that it is possible for pupils to pass from the country schools to the schoolroom as teachers. In the majority of instances, this unwarrantable change is detrimental to the school, as well as a direct injury to the most noble and most poorly paid profession. 'Tis a lamentable fact that this rapid transition from pupil to teacher is sometimes made under very questionable circumstances. When shall we learn that the schools were instituted for the children, and not for the unqualified teacher? Knowledge, culture, character, and preparation for lifes with all its grave exactions, means more to the welfare of our country than food and raiment for the teacher. Would it therefore be a greater violation of the purpose of our public-school system to educate bread producers than to turn out bread winners? If the former is a violation of principle, the latter is infinitely worse in practice.

As a means of promoting the farmers' interests, I advocate the teaching of the elements of the natural sciences in the public schools, more particularly those of the country, which are largely attended by farmers' sons and daughters. In connection with the study of the elementary sciences, I recommend book-keeping and political economy. True, the list is a long one, comprising a number of different branches closely related to the science of agriculture. It seems reasonable that a knowledge of these branches is necessary to prepare the farmer for his chosen pursuit, because the accumulating years have produced a wonderful change in his business. Every intelligent person admits that the modern farmer needs a better understanding of his business to-day than formerly. The changed condition necessarily demands a change in preparation. If he asks for bread will you give him a stone? If a change in educational advantages will better prepare him to overcome the difficulties and discouragements that endanger his business prospects, is it advisable to withhold them? Is it not the duty of educators and legislators to prepare the way? Let the agricultural people unite and demand that their interests receive immediate attention. Now is the accepted time.

The experience of each succeeding year teaches us that the need of knowledge is greater. This principle applies to every calling known to the human family. In its application to the farmer's business we see that the virgin soil has been robbed of its fertility until well-nigh unproductive. Insect foes are destroying forest, field, orchard, and garden; parasites of various kinds feeding upon the branches of honest industry; foes without and enemies within. The world is now the farmer's competitor, made so by cheap transportation. Glutted markets, low prices, financial ruin are the result.

On the other side, every obstacle has been overcome by improved methods. Crops have increased, while expenses have diminished. Something good has been produced that would sell on the market at a profit. It was the result of skilled labor on the farm, accompanied by intelligence and business qualification. It is another illustration of the possibilities of the future, displayed by the genius of the man who knows. Another proof that every man should be wise in his own business.

Being fully convinced that the introduction of the natural sciences into the public schools would inure to the benefit of the agriculturist, I sincerely hope that the subject may receive the attention it so justly merits. Just how to introduce these branches without overloading the course of instruction seems a difficult problem. But difficult as it seems, it is not impossible. Physiology was introduced as a separate study a few years ago. Want of time was the argument against it. The same reasons are now given in opposition to a more extensive course for the common schools. 'Tis the old, old story, told over and over again. Does the person with ordinary intelligence believe that time has been wasted in pursuit of knowledge pertaining to mankind, when that instruction is imparted by a competent teacher? If this addition has been beneficial, why not continue further along the line of improvement?

Much valuable instruction pertaining to agriculture might be given in the school-readers of the higher grade. Let them contain lessons on natural history, botany and meteorology, in place of the extremely light matter found on the pages of some series of readers. Give the pupil the testimony of the rocks; a knowledge of created things that lie in the path of life, leading him through nature up to nature's God; supply books of information upon these various branches for home reading—keeping him in touch with that which shall engage his attention in the battle of life. This will broaden the mind, strengthen the imagination, and inculcate a love for truth. It will stimulate the power of observation, a faculty so sadly neglected in the instruction given in the public schools. Apparently the observing powers of the pupil are almost wholly neglected by the exclusion of nature studies. Eyes we have and they see not the hidden beauties that kind nature has so lavishly strewn about us for our intellectual development. Ears we have and they hear not the plaintive tones of the little burden-bearers whose tasks are only limited by the demands of the inconsiderate teacher, silently but painfully copying lessons not adapted to their wants, while nature's limitless text-book lies unopened before them. O, education, how many crimes are committed in thy name!

In order to introduce elementary science, I would omit the less important subjects in arithmetic, geography, or grammar. I should endeavor to give a "balanced ration." A knowledge of the world about him would evidently do the pupil more good than so much mathematics or geograply. What shall it profit a farmer boy to know the exact hight of Mt. Everest, and pronounce all those heather names that are a burden to the adjoining landscape, if he cannot tell all about a stock of corn or clover? Give the boys and girls more botany, natural philosophy, and chemistry, and less arithmetic, geography and revolting history of bloody deeds of valor. If possible increase the length of school term. Purchase the text books that are adapted to the school, and do not become too deeply interested in the welfare of the irrepressible book agent.

Establish Township high schools, locate them centrally, if possible, and not in a diminutive city in one extremity of the district. Extend the term to nine or ten months if advisable. I see no good reason for giving the children of town and city, one-half more schooling than those of the country. Prepare a course of instruction as well adapted to the needs of the farmer as to the prospective professional. Bear in mind that a course of study for a Township high school, either partially or principally supported by farmers, is incomplete without the natural sciences as an aid to agriculture. Pay your teachers what they are worth as teachers. Do not make the schoolhouse a Winter resort for the unqualified. Build up the farmer's interests by increasing his educational advantages upon the principle that "the best is never to good." Then, and not till then, will country schools prepare country children for country life.

Suspended from a gas fixture in a Kansas City restaurant is a placard announcing that oleomargarine is used there. The proprietor put it up to protect himself when he was unable to get, within the required time, dishes branded "oleomargarine," without which, under a State law, no food containing oleomargarine may be served in a public eating-house. Instead of driving customers away, the sign increased patronage.

"Children Teething."

MRS. WINSLOW'S SOOTHING SYRUP should always be used for children teething. It soothes the child, softens the gums, allays all pain, cures wind colic, and is the best remedy for diarrhœa. Twenty-five cents a bottle.

RELIABLE PATTERNS.

Guaranteed to Fit if Proper Size is Given.

We have made arrangements with one of the oldest and most reliable Paper Pattern houses in New York, which enables us to offer our readers standard and perfect-fitting patterns of the very latest and newest designs.

These patterns are retailed in stores at from 20 to 40 cents. We have made arrangements whereby we can offer them at the extremely low price of 10 cents.

A paper pattern, of any size, of this illustration may be obtained by sending your name and address, number and size of pattern desired, together with 10 cents for each pattern, to the **Pattern Department of**

THE AMERICAN FARMER,
Washington, D. C.

PLEASE OBSERVE THE FOLLOWING MEASUREMENTS.

For Waists: Measure around fullest part of bust, close under arms, raise slightly in the back, draw moderately tight.

For Skirts: Measure around the waist, over the belt; draw moderately tight.

Printed directions accompany each pattern, showing how the garment is to be made.

When ordering patterns for children, please also state age of child.

20637 - 20651.

20657-20651—LADIES' COSTUME.

Here is a very stylish design for a new Fall gown. Dark-blue figured mohair combined with silk of the same shade were the materials used for its development. The modish bodice is cut with a full blouse front of the silk, on each side of which are displayed stylish jacket fronts of the cloth adorned with large revers faced with silk. The back is cut in one piece with the slight fullness confined by gathers at the waist lines. The crush collar and narrow belt are of velvet.

The handsome skirt is made with nine gores and has its four back gores gathered. Canvas cloth, covert, broadcloth, serge, cheviot, taffeta or gros-grain silks or almost any fashionable material can be used for this costume.

20657.—LADIES' BASQUE WAIST

(with Jacket Front and Two-piece Sleeves,) requires for medium size 4¼ yards material 22 inches wide, 2¾ yards 36 inches wide or 2¼ yards 48 inches wide. Lining required 1¼ yards. Gimp represented 3 yards; ribbon 3¼ yards. Cut in 5 sizes—32, 34, 36, 38, and 40 inches bust measure. Price 10 cents.

20651.—LADIES' NINE-GORED SKIRT

(having its four back gores gathered,) requires for medium size 7¾ yards material 22 inches wide, 5¼ yards 36 inches wide or 4 yards 48 inches wide. Lining required, 7 yards. Length of skirt in front, 41 inches; width around bottom 5 yards. Cut in 6 sizes—22, 24, 26, 28 30, and 32 inches waist measure. **Price 10 cents.**

20661

20661.—GIRLS' DRESS.

This little dress is made of dark-green-and-white figured novelty goods. The pattern is cut with a full blouse front which "bags" slightly in the manner so becoming to children. The back, where the costume closes, is gathered.

The handsome one-piece sleeves are finished by pointed cuffs of velvet to correspond with the jaunty pointed trimmings placed over each shoulder. A stock collar, fastening under a smart bow in the back, finishes the neck. A fitted lining is required for the bodice. The straight skirt displays the proper amount of fullness and is plainly finished by a deep hem. Serge, cheviot, canvas, mohair, challie, taffeta, foulard, gros-grain silk, etc., are appropriate for this model.

20661.—GIRLS' DRESS

(with Blouse Front, One-Piece Leg-o'-Mutton Sleeves and Full Straight Skirt,) requires for medium size 4¾ yards material 27 inches wide, 3¾ yards 36 inches wide or 3 yards 48 inches wide. Lining required 1½ yards; velvet represented ½ yard; buttons 30. Cut in 5 sizes, 8, 9, 10, 11 and 12 years. Price 10 cents.

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1729 N. Y. Ave., Washington, D. C.

"HASTE TO THE WEDDING."

BY GERTRUDE KINGSTON.

"Elfrida, my dear, there is no mincing matters. You have made a mistake somewhere and somehow. But where and how? Ah! that's the question." So spoke Miss Chester to herself, as she sat at her dressing-table with folded arms and contemplated her own image in the glass—a lovely reflection, with which even her critical gaze could find no fault. Six seasons of overcrowded ball-rooms and late hours had not destroyed the unimpeachable peachiness of her skin; nor could she find the smallest crow's-foot round her eyes, examine them as she would. She pulled a stray curl with her fingers and thoughtfully felt its texture. It was still silky and lissom, and flew back to its place on being released, like a golden feather. No, the fault did not lie with her looks. It must, then, be a question of policy. She had seen so many of her girl friends marry during those past seasons; plain girls, dull girls, muscular girls, skinny girls, tall girls, short girls, they had all found husbands independently of their appearance—indeed, the ugliest had invariably carried off the best prizes. She had been first bridesmaid to them all, for it is in the unwritten code of bridal etiquette to provide your smart best man with a handsome best girl; yet she who had assisted in tying the knot so often had never, before Dolly Everdon's offer, received any invitation to assist at a wedding otherwise than in the capacity of bridesmaid.

Maria Lady Chester, her aunt, had gone out to dinner to-night, and Elfrida was left alone at home. Womanlike, she shuddered at the social formality of dinner alone in the mahogany dining-room under the searching eye of the family butler, and took refuge in that feminine mystery of "high tea," brought up on a tray to her bedroom by the housemaid. The remnants of the meal stood on a small table by the fireside.

Now, Elfrida had a healthy appetite, but tea must exert a less cheering influence than the poet whould have us believe, for she fell involuntarily into a melancholy mental review of the past six seasons, that nothing but a reassuring glance at her mirror could dispel.

"ELFRIDA, MY DEAR, YOU HAVE MADE A MISTAKE."

She had come out in town under the best auspices. True, her parents elected to remain all the year round in the country, but they had farmed her out with her two aunts, between whom she spent her seasons, and they were both social powers in their way. She did not know why, nor did any one else, for the matter of that, for they were both dowagers with paltry jointures and small town dower-houses, but still they had social genius and used it to advantage. No one could see better people or go to better houses than her aunt Maria—Lady Chester. Nor could any one give her better and more temperate worldly advice, or collect more eligible young men round her tea-table.

Elfrida was too wise a girl to underrate the advantages of such a chaperonage. She took the whole blame of failure to herself. "I think," she said at last, with a sigh, after mature contemplation of her charms, "I think I am too well dressed! I fancy men like the modest violet best, because they fancy they will have to pay too much for Paris frocks for the full-blown rose. I may have a way of putting on my clothes as though they came from Doucet's, although Heaven and Lizzie alone know that they are manufactured at home by the sweat of her brow. "I shall sin no more," she continued to herself, and rose to ring for her maid.

When the maid entered, she pointed to the gown that lay ready for her on the bed. "Lizzie, put that shot silk frock away and get me something dowdy."

Lizzie looked puzzled.

"You have nothing dowdy, miss."

"Then get me out something old," rejoined her mistress, frowning.

In a few moments her maid returned with a draggled arrangement of pale-blue silk and nun's veiling, that had done duty at many a crush during many a season, and asked, with disdain:

"Is this old enough, miss?"

Miss Chester picked at it with thumb and forefinger, and a slight contraction of her delicate nose. Then she answered, heroically: "It wants a fresh balayeuse inside, which you will have plenty of time to put in, as her ladyship will not call for me before 11:15."

"Very well, miss," replied the maid, and retired.

Miss Chester looked at the clock on the mantelshelf and saw it wanted 25 minutes to nine. Hurriedly she flung a dark fur cloak round her and slipped downstairs, pinning on her hat as she went.

In the hall she met the butler.

"I am going across to Lady Ferveyed for an hour. Tell Lizzie I shall be back to dress a little after ten."

Once out of doors she jumped into a hansom cab, calling the address to the driver.

A few minutes later she knocked at the door of a house in Victoria Square, and was instantly admitted. She walked straight through the small hall into a room on the left, followed by the man who had opened the door to her. Here she disappeared, wrapt in his embrace. After returning his kisses with some degree of warmth, she disengaged herself gently and said, "Well!"

"Take off your cloak and warm yourself by the fire, Elfie."

"AFTER THE FASHION OF THREE YEARS AGO."

"No, dear, I can't stay. Aunt Maria will be in any minute, and may miss me. Tell me your arrangements quickly, and let me go."

"Well, I've got the license, and I've settled with the parson. The brougham is going to pick you up at the Eaton Square corner of Clieveden Place, so you won't have five minutes to walk, and you will find me on your way opposite the Duke of York's School in King's Road, Chelsea."

"Have you anyone to be our witnesses?"

"Oh, yes; the parson seemed quite accustomed to this sort of business, and said he would provide them—pew-opener and the sexton, I presume."

"And then?"

"And then you'll have a little luncheon with me, and we'll go off by train to the Hotel at Sandgate for a few days. Won't it be lovely?"

"Are you going to the Willshires to-night, Dolly?"

"No, darling; are you?"

"Aunt wants me to," replied the girl, looking into the fire.

"I wouldn't, if I were you, just the day before we're going to get married, go out without me! I'm going to stop at home quietly and think things over, and try and make virtuous resolutions for the future," said the soldier, reflectively.

"Perhaps I can get out of going, too," answered Elfrida, in a constrained tone of voice. Somehow, before the simplicity of this man's affection, she felt as if she were in church, and Elfrida never felt at home with religion.

He put his arm round her and pressed her to him, whispering: "I shall pray to God to help me be a good husband to you."

After a pause, Miss Chester rose. "I must go now, or aunt will be in before me."

"I'll ring for Speede to get a cab."

She stopped him as he put his hand on the bell. "I don't want him to see me here."

"Why not, Elfie?—there's no harm. We're going to be married to-morrow."

"All the more reason," she rejoined, taking up a photograph to avoid meeting the frank eyes seeking hers. Dolly, sentimental, almost made her uncomfortable.

"As you will, sweetheart," he said, putting his hat on his head. "I'll walk round to Victoria, and put you into one myself. It is dark, and no one will see us."

Back again alone in her room, Elfrida Chester shuddered. She remembered that she had promised to get secretly married the following day, and what had seemed to her romantic, enthralling, absorbing since many days, now appeared a mad and unintelligible freak when looming close upon her. Why had she consented? Because the fascination of knowing that a man was ready to sacrifice prospects and property for love of her was as bread and water to this starved girlish heart that had never been loved before.

Or, if she had been loved, no man had had the enthusiasm to give up the good things of this world to possess her as his wife. For Elfrida had no money, and perhaps even less heart, albeit her passionately erotic nature stood her in lieu of one.

When Dolly Everdon pressed his lips to hers she had been ready to go to the other end of the world with him. She had consented to leave her aunt's home the following day to get married by special license at some suburban church, to risk the unforgivingness of parents and guardians, all for the curiosity of learning the mystery into which so many of her girl friends, younger than herself, had already been initiated. And now, here, left alone in her own room, she was considering the advisability of suiting her appearance to popular taste with the unspoken desire of attracting other men.

Deep down in her soul, unconfessed, unrecognized, sprang the "hope eternal" that something unforeseen might help her in the eleventh hour from the final step which should make her wife to a penniless huzzar, yet with it all she experienced a sense of burning shame in the eyes of the world she loved that she, the much-photographed, much-beparagraphed Elfrida, should have remained single until the age of 25. Morbidly she felt it a slur on her character. By 11:15, when Aunt Maria's footman told her that the carriage was at the door, Elfrida stood before her pier-glass in her draggled blue frock, and as she looked into it her lips broadened into a smile. After the fashion of three years ago, the sleeves were small and tight, and dragged themselves perforce off a satiny but girlish white shoulder. The little gathered bodice, for which she had grown a trifle too stout, revealed, in an unconscious way, a little more than that modestly-cut garment had intended; and the skirt, unlike the present fashion of falling in wide, bell-shape folds, clung lovingly to a small thigh that followed the line to the knee, and tapered downwards to a narrow blue foot.

The girls at the ball would stare aghast at her new whim of "dowdiness." As for the men, she would see for herself whether her reasoning of six seasons had any truth in it, and whether they were so easily gulled if once understood. Fortunately, as she fetched Aunt Maria from the house where she had been dining, the latter saw nothing but her niece's outline in the darkness of the brougham, and it was not before she was well launched in the ball-room that the Dowager observed her toilette. A cry of anger escaped Lady Chester when her eyes fell upon the worn blue crepe. She called Elfrida to her side. The latter affected not to hear, and waltzed persistently with her partner.

"Shall I call her for you?" asked an elderly Field-Marshal of the Dowager Marchioness.

"Who is she dancing with, Sir Godfrey?" said Lady Chester, for all answer.

"With Robert Best, the brewer, I believe," he replied, with a smile. "I will tell her you want her."

"No, no, Sir Godfrey," exclaimed Maria Marchioness, with an indulgent smile; "leave her alone if she is amusing herself. It is not fair to disturb young people. They say the brewery is to be turned into a company. Have you heard so? And the two wandered off to the supper-room, gossiping about the probable price of the shares.

Meanwhile Elfrida determined not to think of to-morrow, but to amuse herself to-day. She danced incessantly, furiously, with the hope of out-dancing her own thoughts. How many of us know that effort with the fear of a fatal step to be taken, keeping time to our feet in the dance!

Seated in the conservatory side by side with Mr. Best, the brewer, she realized suddenly that these were her last hours of freedom, and burst into tears.

Mr. Best did not know how to deal with tears that could not be wiped away by £ s. d. He had been through so many of these scenes, eventually set right by a cheque from him. This plainly, almost shabbily dressed yet beautiful girl he instinctively recognized was not of those who could be paid for. He found himself pitying her, and, not knowing the reason of her tears, could improvise no words of comfort. He was at last betrayed into speaking love. She listened, dried her eyes, said neither "Yes" nor "No," but answered that she was tired, and would ask Aunt Maria to take her home. Pressed for a reply, she told the brewer he would think differently to-morrow of his question to her. Miss Chester was, of course, thinking of her own situation and the news of her approaching marriage not 12 hours later. Mr. Best, on his side, interpreted her words to meet his case, and was delighted to find a disinterested girl who, far from clutching at his thousands, left him time for maturer reflection. And he fell madly in love.

After a restless night of indecision, Elfrida rang for her maid, and ascertained that her ladyship was not to be called until 11 o'clock. She must act now or never. Crossing to her desk, she reflected that a letter and messenger until one could be found would cause too much delay. A telegram, then. Yet how to word it? "I do not want to get married," the gist of it, was a cruel thing to wire to a man whose only fault was his love for her.

Finally she decided to dress and go herself to explain in person. She slipped out unperceived, found the brougham at the place indicated, and entered it. A few steps farther, Dolly waved to her from the door of a jeweler's shop. The coachman drew up and her lover joined her. As they drove off he threw his arms around her, saying:

"By George, Elfie, I had forgotten the ring! I only thought of it just now, when I was waiting for you. I looked

"COULD IMPROVISE NO WORDS OF COMFORT."

in the jeweler's window to pass the time and saw some wedding-rings marked for sale. Then I remembered we had not got one."

"Is it a nice, fashionable, narrow one, like Lady Flora's?" asked Miss Chester, absently, wondering how she could broach the subject on her mind.

"No, dear; that had to be made, and we wanted this at once. Let me try it on your finger, Elfie, to see if it fits!"

"Don't! Don't! It's unlucky!" cried Elfrida. After a pause, during which the hussar replaced the ring in his pocket, she made another effort. Clearly she must speak now or else hold her tongue for ever. "I was awake all night, Dolly."

"What kept you awake? The idea of me for a husband, Elfie? Well, it's too late now," said Dolly, with a loud laugh and a kiss.

It had failed this time, and she had not the heart, or was too weak of heart, to stop his laughing.

"To what church are we going, Dolly?" she asked, again mentally reckoning how long a drive it would be, and how many minutes were left her to strike the blow for freedom.

He answered, still laughing: "To a nice little parish church over Hammersmith way. I have lived there nominally and legally speaking since three weeks—that is, I have a room in the parish, where I keep a portmanteau. The portmanteau contains an old uniform!" His hand sought hers. "Your fingers are frozen, Elfie. I believe you had no breakfast. Let me stop at a wine merchant's in the road and get you a glass of port wine?"

"No, thanks, I won't have anything. No, I couldn't take breakfast. I was too excited."

"My darling," exclaimed the soldier, leaning forward and looking into her face, "you're not well; was that it?"

"Well, dear, you know I don't get married every day. Only once in a lifetime, I fancy."

"Only once! I hope so devoutly, for my sake, Elfie," he rejoined.

She attempted a feeble laugh. If relief was to come it must come from herself, and she was waxing weak under Dolly's enthusiasm. Besides, time was being lost. "It might be once too often," murmured the exasperated bride-elect.

The color faded from Dolly Everdon's face as he turned to contemplate the woman by his side. She looked away, ashamed.

"Are you serious? Then say so at once. If you do not think you love me enough, there is still time," he said, sternly, as he laid his hand on the check-string.

"Don't, Dolly; the clegyman is waiting and the witnesses, and there's the license, and the ring," implored Elfrida, hating herself for her indecision, yet unable to decide for herself.

"Is that all that keeps you to your word—the trifling expense I have incurred? In a few minutes all the money in the world can't undo it."

"I know, I know," moaned Elfie, wringing her hands. "What frightens me is the expense afterwards—of living altogether—I have only £100 a year, and you have but £250 that your father allows you, besides your pay"——

"You knew all this before!" interrupted Dolly, sullenly.

"So I did, but you never allowed me to discuss it seriously before. You put me off with a kiss"——

"So I will now," cried the soldier, suiting the action to the word.

She disengaged herself from his embrace.

"No, Dolly, let me speak. Last night it occurred to me, what should we do if your father stopped your allowance?"

"Oh, he's not such a sneak; besides, as long as we love each other, it will all come right."

"But supposing he did! I thought it all out last evening"——

"I thought you told me you were going to a ball, Elfie?"

"So I was—at the Willshires."

"It must have been dull, to give you time for domestic economy."

"I thought of all this, Dolly, when I came home this morning." Mr. Everdon looked at her curiously.

"Don't you think, little woman, in view of the step you were contemplating to-day, it would have been wiser to have stayed at home and thought it over quietly yesterday?"

Her lover's tone had an irritating effect on Elfrida, and as a result of this she was regaining possession of herself. She answered, angrily:

"You know very well I had to go. Aunt Maria expected me to, and I couldn't tell her by way of an excuse that I was going to be married to-day, when she is the one person who is not to know."

He perceived the change of manner, and looked out of the window at the shops they were flying past. He had a faint notion they were now in the neighborhood of Walham Green.

"Was there anyone nice at the ball?" he asked, still contemplating the passers-by.

"Oh, yes, nice enough; but I missed you."

"Darling! Who did you flirt with instead of me?"

"Flirt!" echoed Elfrida, now seriously angry with her lover because she had not used the loophole he had generously offered her. "Flirt!"

There was some suspicion in the glance he threw over her.

"Well, then, who did you speak to?—if you like that better."

"Don't be disagreeable, Dolly. I am not your wife yet."

Dolly's voice rose as he exclaimed: "Don't beg the question. Who did you spend your evening with?"

"I danced with a great many people," replied the girl, sullkily, with the secret hope of egging him on to some violence that might form an excuse to break away from him. Dolly was waxing excited.

"With whom did you dance more than with any other?"

Miss Chester shrugged her shoulders. "I can't remember!"

"Answer me. You're lying to me," retorted Everdon, roughly.

"I should say with Mr. Best as much as with any other," said Elfrida, with an assumption of indifference.

"Best, the brewer?"

Elfrida nodded assent.

"I knew it!" cried Everdon, hitting the palm of his right hand with the fist of the other. "I knew some rich chap had been making love to you. You never thought of poverty before."

"What nonsense," whispered Elfrida, under her breath, wondering whether her release was near at hand.

"But," continued Dolly, brutally, "he only makes love to a girl, does Mr. Best—underbred millionaire that he is. He's not a marrying man. He knows a trick worth two of that!"

Her lover's taunt stung her into exclaiming: "Not a marrying man, indeed! Well, he asked me to marry him, then, last night!"

There was a silence broken only by the roll of wheels over the hard road. Everdon felt the beating of his heart almost shake his body. His breath came in short, quick gasps, as he leant over the woman he loved. "And you? What did you say?" he murmured hoarsely, watching her intently.

"BUT I DO LOVE YOU!"

Again she shrugged her shoulders, indifferently. She was a little frightened at the effect of her words, and kept her eyes on Dolly's clenched fist as she responded: "I said neither 'Yes' nor 'No'!"

The man's eyes rested on her lips—the lips that had just spoken such words of treachery. Staggered, stunned, he lifted his hat, and unconsciously wiped the beads of cold perspiration that rose on his forehead. At that moment they were approaching the Metropolitan railway station. He shook himself as if awaking from a nightmare, and his words came with effort from a parched throat.

"I am going to put you down here at the station. I shall go on by myself to tell the parson he won't be wanted and to give the sexton and his wife a tip. The poor woman is sure to have got herself some new gloves to witness our—your marriage."

His quiet voice moved Elfrida to tears.

"You're not going to give me up, Dolly?" she sobbed.

"You gave me up, Elfie, when you said neither 'Yes' nor 'No' to Robert Best. Coachman, please pull up at the railway station," he shouted, leaning out of the window.

They drew up by the pavement. Miss Chester burst into a fresh paroxysm of grief. "Where am I to go? What am I to do?" she wailed.

"Take a first-class ticket to Sloane Square, and get home—you're just in time for luncheon. And if you take my advice, before you sit down to a meal, you'll wire to Mr. Best, accepting his offer, before he repents of it."

"I have no money for my ticket," stammered Elfrida between her sobs. He threw a shilling into her lap roughly, without a word.

"Oh, Dolly," burst out Elfrida, shocked at the alteration she perceived in her lover's face, "tell me you're not angry with me."

"No, I am not angry with you, little woman. It's not your fault, it's the way you've been bred. Good-by, and don't forget my advice to you."

"You will come to see me sometimes?" pleaded Miss Chester, through her tears, "for I do love you!" and she put up her lips to be kissed. Everdon raised his arm with clenched fist. For an instant Elfie thought he would strike her across the face. Now, her face was her fortune, she knew, and she cowered in a corner of the brougham, afraid to move. At the sight of her involuntary movement he dropped his arm.

"Get away, for God's sake, before I forget you are a woman and that I loved you," cried the soldier, hoarsely, covering his eyes with his hands.

The woman scrambled out of the brougham. At the entrance to the railway station she turned to look at the lover she had just left. She saw only the panel of the carriage shining in the sun as it disappeared down the road.

Out of sight, the man who loved her rolled on to the cushions, biting them in his pain.

"My God! She's not worth crying for," he exclaimed in his agony, "but I wanted her, all the same."—*Strand Magazine.*

THE BEST DRIVING LAMP.

T. B. Terry in Practical Farmer.

In looking over the P. F. this morning, I noticed the "ad." of the Dietz driving lamp. As we have had one for several years you may like to know how we like it. I do not like to drive in a very dark night. When I must, I want a lamp that will light the road ahead of me, so I can see about as well as in the daytime. This Dietz lamp is dark in the rear, so it does not trouble your eyes, and can be attached to center of dash-board for two horses, or on the left side for one horse. Then I sit on the left side and drive in the blackest night with safety and comfort. There is no straining of the eyes. I can see teams coming better by sitting on the left side, and having lamp on same side. If I sit on right side, the shadow cast by horse bothers me. In a dark night there is no trouble in lighting the whole width of the road from fence to fence, 100 feet or more ahead, except in the shadow of horse. This testimony is entirely unsolicited. I saw their "ad." in *Country Gentleman* several years ago, and bought a lamp and like it.

Do not forget THE AMERICAN FARMER when providing for your Winter reading. Nowhere else can you get so much good reading matter for so little money.

THE ENIGMA.

[For the leisure hour of readers, old and young. All are invited to contribute original puzzles and send solutions to those published. Answers and names of solvers to this issue will appear in two months. An asterisk (*) after a definition signifies that the word is obsolete. Address letters for this department: "Puzzle Editor," AMERICAN FARMER, 1729 New York Ave., Washington, D. C.]

ENUCLEATIONS NOS. 28 AND 29.

263—A chapter in life.

264—
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  S
 FED
CORES
CORANTS
FORESTRAT
SKRASKIERAT
DENTITION
STREKING
SAROS
TAN
T
```

265—Asseverate.

266—
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  A
 APP
SNOOK
SHINIER
ANIMETTAS
APONEUROSIS
POITRINES
KETONES
RASES
SIS
S
```

267—P-rid-e

268—
```
  P
 HAT
PARES
PARTIES
HARPYBATS
PARRYJURIES
TRIBUTARY
SKARATS
STIRS
SKY
S
```

269—
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  B
 HOS
SENTS
SKACATS
HEATHGAME
BONCHRETIEN
STACKVILS
STATIVE
SMILE
KES
N
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270—

271—
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  O
 BUB
CASER
CATTAIL
BATHORSES
OUSTOUSKAIA
BEARSKINS
RISKING
LKANG
SIS
A
```

273—
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  C
 SON
SHUNS
SPONDYL
SHORTENED
COUNTERDEED
UNDERTIDE
SYSDIKS
LKEDS
DKE
D
```

272—The Declaration of Independence.

274—S-cud.

275—
```
  D
 FIB
DEALS
BESMOID
FESTOONED
DIAMONDALIA
BLOODHEAT
SINAKAN
DELAN
DIT
A
```

276—Hear; Fear.

277—
```
  D
 CIS
MOATS
MERMAID
CORDONNET
DIAMONDALIA
STANDUPON
SINAPIS
DELOS
TIN
A
```

278—DOnuts, Doughnuts, Food; REmeant, Raiment, Clothing; MIduller, Medulla, Pith; FAlls, Furlies, A wonder; SOLear, Soler, A garret; LAboard, Larboard, Port; SIdum, Sedum, Orpine; DOdoze, Dodoes, Birds extinct.

279—
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  D
 AIS
ANAPA
ALAMORT
ANACONDAS
DIAMONDALIA
SPONDYLUS
ARDALES
TALUS
SIS
A
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282—
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  D
 TIE
TRAPP
TRIMERA
TRITONIUM
DIAMONDALIA
EPENDYMIS
PRIAMUS
AULIS
MIS
A
```

280—S-oft.

Authors of word-forms: Primose, Rex Ford, Rokeby (2), A. Dandy, Guardineer, Rex Ford. Rokeby, Rex Ford (3).

ENIGMANIACS.

August and September Enigmas were solved as follows:

Complete Lists: G. Race, Alumnus, K. T. Did, Guidon.

Incompletes: Eugene, Gi Gantic, Poly, C. Saw, Arty Fishel, Cinders, Lo Yell, Joel H. Hint, Remardo, Ben Trovato, Malenco, Lucile, Primrose, Pearlie Glen, Serpeggiando, Pearl, Rex Ford, Carl, Arcanus, Eloise, Rokeby, Simon Ease, Marimanda, Elsie, A. L. Vin, Harry, E. Lucy Date, Orlando, A. F. Armer, F. L. Smithe, Jo King, T. O'Boggan, Lillian Locke, N. E. Moore, Pansy, Ingleside, Frantz, Caro, Swamp Angel, Cecil, Janus, A. Dandy, Miss Chief, Oloffe Innished, Cosette, Rodger, Jo Urnal, A. N. Drew, Ellsworth, Jason, Newcomer, S. A. D., Noraf, Sindbad.

Prize Winners.

1. K. T. Did; 2. E. Lucy Date; 3. Jason; 4. Arty Fishel.

ENIGMANIA—NO. 31.

NO. 293—ANAGRAM.

Thou art Life's Masterpiece.

True friendship, like the chains of mouldy Time
That Damon to the end with Pythias bore,
Now seems unreal, a legendary lore
That sweetly sounds in old enchanted rhyme.
Through icy zones, through every sunny cline,
In marble halls, and through each cottage door—
O'er land and sea we seek in vain, no more
To find a Youth, its ideal trait sublime.

Bold sycophants are striving for the gold
That unsuspecting men have justly made,
By using friend, that sesame to the heart,
To gain the strength which they so firmly hold.
By shore or stream, in town or rural shade,
Through life they dwell, and play a leading part.

—ZOROASTER, Philadelphia, Pa.

NO. 294—SQUARE.

1. Town of Austria. (Worc.) 2. Town of Mexico, in Nicaragua. (Worc.) 3. Town of Asiatic Russia, on the Jaxartes. 4. A contrivance in some of the earlier steam-engines. 5. A civil officer in some Swiss cantons. 6. A pirate. 7. A close four-wheeled carriage. 8. Norwegian astronomer and writer; b. 1784.

—T. HINKER, Bangor, Pa.

NO. 295—TRANSPOSITION.

(*With apologies to "Sweet Alice."*)

Beside the road, all overgrown,
With tangled weeds and thorns awry,
A little mound, obscure and lone,
Attracts the gaze of passers-by.
No slab of granite marks the place
Wherein this man, neglected, lies,
No one to mourn with saddened face,
No one to weep with tearful eyes.

How well can I remember when
In youthful days fast friends were we,
How oft we played together then,
And romped the fields with boyish glee.
But ONE he took to drink. Ah, friend,
A sad, sad turn for one so young.
His ways I tried to make him mend,
But still to that fiend, drink, he clung.

When next I saw him years had passed,
How thin and TWOED he then appeared,
His life away was ebbing fast,
And rapidly his end he neared.
Thus lower and yet lower sank
This man whom I had tried to save;
The cup of bitterness he'd drank,
So died to fill a drunkard's grave.

—L. M. N. TERRY, Baltimore, Md.

NO. 296—DIAMOND.

1. A letter. 2. Ancient name of the Neva. 3. Throats. (M. and S.) 4. Hebrew. 5. Caputa. (Dungl.) 6. Converted to a noun.* 7. One of the nine chief works of the Vedas. (Brewer's Historic Notebook.) 8. Retaliative. 9. A city of Bulgaria, or the Danube. 10. One of the Ostoidea. 11. Province of Brazil. 12. Dull. 13. A letter.

—PALLAS, Pawtucket, R. I.

NO. 297—CHARADE.

When my garden was in bloom
Flowers fair,
With a rich and rare perfume
LAST the air;
Roses red and lilies white
With their beauty charmed the sight,
And 'twas ever my delight
To be there.

But the plant I prized the most
Had a flower
Which no gaudy tints could boast;
For its power
Lay in the fragrant bloom
Which its blossoms would assume.
I could drink its PRIME perfume
By the hour!

It reminded of a face
Once I met;
And I ne'er its winsome grace
Shall forget.
'Twas so mild and unassuming,
With an inward light illuming,
Like my TOTAL, meekly blooming
Mignonette.

—WILL-O'-THE-WISP, New York City.

NO. 298—SQUARE.

1. A place or region where great events are enacted. 2. A native of Hayti. 3. Pacific. 4. Childlessness. 5. Covering with tin. 6. A sub-family of rays. (Cent.) 7. Coops up.

—PHIL DOWN, Brooklyn, N. Y.

NO. 299—CHARADE.

Through the FIRST yard, one day, I chanced to roam,
My path of life was dull and dreary—
I thought of friends in their faraway home,
And I felt of life's burdens weary.

But soon a TWO at the head of a ONE,
Near to the ONE of Billy Hollows—
Attracted me and I read of him now gone—
The marble TOTAL read as follows:

Sacred to the Memory of
Jabez Jenkins,
Late of the *Gauntlet*,
Sphinxy Solver.
Died as
He lived
An Extraordinary
Flat Form.
Began Puz.——— 1875.
Exit I. T. Y. O. O. S. 1888.

An enterprising poser was Jabez. He
Ran the *Gauntlet* in '87—
In truth, I wouldn't be surprised to see
Him running the gauntlet in Heaven!

—LOCUST, Allegheny, Pa.

NO. 300—ICOSAHEDRON.

1. American author; 1794-1844. 2. To digest. 3. Honors. (R.) 4. To clothe.* (Stand.) 5. Native. 6. A nook. 7. Clatters. 8. Beautiful. 9. A kind of large cape, or short, full cloak, forming part of the dress of ladies. 10. Reefs or fallen cliffs of the sea. (Stand.) 11. To let back. 12. Spanish Carmelite nun; writer; 1515-1582. (Stand. Proper Names.) 13. An ancient people of Asia Minor. (Encyc. Brit.)

—PRIMROSE, Baltimore, Md.

NO. 301—TERMINAL DELETION.

'Twas at Koster and Bial's that I met him, I think,
Such an affable man, and with money to burn;
How could I refuse when he asked me to drink
Just ONE brandy and soda. That I should return
His pledges of health, ALL as settled as fact.
(In truth, I was rattled and missed half the act.)
To have Gotham strangers come sauntering down,
Invite you to drink and to take in the town,
Show money by handfuls, (a feat that is rare,)
Inquire about all of the folks in Montclair,
Was strictly unique,—not for worlds would I turn
From this affable man, who had money to burn.

I changed him a ten, in fact I recall
The act was repeated full many a time,
What he did with the change is a problem too tall
For me to unfathom. I know every dime
The waiter or flower girl received was from me,
While he did the noble. We seemed to agree
In every discussion, and when morning dawned,
He glanced at his watch, and then wearily yawned,
And trusted that evening he'd see me again,
And asked as he left could I change him a ten—
I'm easy for greengoods,—hereafter I'll spurn
All affable strangers with money to burn.

—H. S. NUT, Boston, Mass.

NOS. 302-3—DIAMONDS.

1. A letter. 2. An expanded form of *CB* for *ich*. (Murray.) 3. To degrade. 4. Snowed or hailed with a mixture of rain. 5. Partizans of chess. (Murray.) 6. A scoop like implement to thrust into cheese in sampling it. (Stand.) 7. Styling. 8. Worn-out. 9. Obsolete form of *dene*. (Murray.) 10. The gladen. 11. A letter.

1. A letter. 2. Exclamations expressive of surprise. 3. An organic radical, existing especially in oils of garlic and mustard. 4. Broad daggers formerly worn at the girdle. 5. The stormy petrel. (Stand.) 6. A small South American edentate, allied to the armadillo. 7. A base parasite. 8. Higher alcohols of the paraffine series. 9. Stones. (M. and S.) 10. A river of England, in Cumberland. (Worc.) 11. A letter.

—GI GANTIC, St. Louis, Mo.

ENIGMIANA.

We have had a most generous and hearty response to our prize offers for contributions, made last month, and some excellent work appears this month, which is entered in competition. As the time for submitting contributions does not expire for a month, yet we repeat the offers—a year's subscription, in each of six cases, as follows:

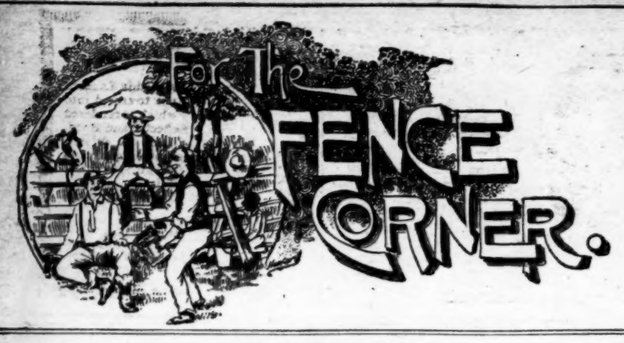
1. For best pair of verse puzzles.
2. For 2d best pair of verse puzzles.
3. For 3d best pair of verse puzzles.
4. For best square.
5. For best diamond.
6. For best pyramid or inverted pyramid.

Up to the present time there is but one entry for No. 6.——L. M. N. Terry will, we hope, be pleased with his welcome and remain permanently with us.——Zoroaster writes that up in his burg people are asking what is the difference between Barnum and Bryan. Philadelphia puzzlers to a man answer that the former "has a show" and the latter has not.——We shall place this issue of "The Enigma" in the hands of a number of puzzlers who are not subscribers, and to those who wish to tarry with us a year we say: Send us 25 cents, silver or stamps, to "Puzzle Editor," AMERICAN FARMER, 1729 New York Ave., Washington, D. C., in a letter *marked personal*, and we will enter you on our subscription list for one year and send you *free* St. Julian's bright monthly for the same period. This is an offer which should be accepted at once, as it may be very soon withdrawn, and you may also miss a "deadly parallel" or two by the Saint.

11-1-'96. R. O. CHESTER.

The beautiful catalogue of Incubators, Brooders, etc., of the Von Culin Incubator Co., surpasses anything they have ever gotten out, except the wonderful Simplicity Hatcher which they send to all who wish it on trial, without asking you to pay them a cent until after you try it. This is a fact and no catch about it. Their large, beautiful catalogue will tell you all about it, and much about the poultry business and what can be made out of it. Almost every page is handsomely illustrated. Send five cents to pay postage, to Von Culin Incubator Co., Delaware City, Del.

Imagine living in a planet where the grass and foliage are red instead of green! Doesn't even the thought of it make your eyes ache? But that is what a French astronomer holds is the case in Mars, and is the cause of its ruddy color.



No Use for It Personally.

Fly Farragut—"Lady, cud yer give a poor man work?"
Lady—"I could."
Fly Farragut—"T'anks, lady. De nex' poor man I meet dat needs it I'll end ter yer." (*Finishes his pie.*) —*Judge.*

The Sear and Yellow Leaf.

Parson Goodman—"Why are you crying, little boy?"
Boy—"I can't bear to see the leaves begin to turn, sir."
Parson Goodman—"Ah, you must be a born poet. Poets always feel sad at this time of the year."
Boy—"It's school-book leaves that I'm referrin' to, sir." —*Judge.*

The Last Touch.

"Now, gentlemen and ladies," said the street fakir, exhibiting a bottle of his famous hair restorer, "this preparation used externally will insure a full suit of hair to the smoothest pate in the crowd. But remember this one necessary precaution: When the hair is once grown, than take a couple of doses internally."

"What's that for?" asked the prospective purchaser.

"To clinch the roots," replied the fakir, as he handed down the bottle and pocketed two bob."—*Larks.*

Bicycle Meat.

She Knew It.

"So you feel you cannot marry him?"

"Yes, I am fully decided.

"Why, don't you like him?"

"Oh, I like him well enough, but I can't get him to propose."—*Harlem Life.*

Why He Behaved.

Parson—You behaved very well in church, Tommy. You were quite quiet while I was preaching.

Tommy—Dad said he'd smack me if I woke him up.

An eccentric lawyer thus questioned a client: "So your uncle, Dennis O'Flaherty, had no family?" "None at all, your Honor," responded the client. The lawyer made a memorandum of the reply, and thus continued: "Very good. And your father, Patrick O'Flaherty, did he have chick or child?"

An invalid, after returning from a Southern trip, said to a friend: "Oh, shure, an' it's done me a wurruld o' good goin' away. I've come back another man altogether; in fact, I'm quite meself again."

Never Any More.

"What time is it, my lad?" asked an American traveler of a small Irish boy, who was driving a couple of cows home from the fields.

"About 12 o'clock, sir," replied the boy.

"I thought it was more."

"It's never any more here," returned the lad, in surprise. "It just begins at one again."—*Harper's Round Table.*

The Field.

Old wheat, if kept perfectly dry and sound, is as good seed as new.

In growing sweet potatoes it is a matter of the first importance to have land which is naturally dry or which has been thoroughly drained. Roots can be produced upon wet land, but they will not be fit to eat. The ground should be fertile, but not too rich, lest there be a too luxuriant growth of vines to root between the rows and reduce the crop.

Fire-dry the seed corn before laying it away for the Winter. The cob should be thoroughly dried out before freezing weather, in order to preserve the full germinating power of the seed. Good seed goes a great way toward insuring a good crop. To be sure of good seed, dry it quickly and thoroughly.

Do not forget THE AMERICAN FARMER when providing for your Winter reading. Nowhere else can you get so much good reading matter for so little money.

THE DAIRY.

Skimmings.

To milk young, restive cows, raise one of the forefeet.

Milking should be done at the same time every day.

Milking should be done rapidly; slowness causes loss of cream.

Milk thoroughly to the last drop, because the last milk is the best.

Always keep the hands clean while milking, also the cow's udder, and the dairy utensils.

A liberal application of fresh lime whitewash will aid in keeping the cow barn sweet all Winter.

The Rhode Island Station says that milk fever in cows is a brain disease, and is inherited by many cows.

Oats and bran mixed make a fine grain ration for the growing calf. If there is any skimmed milk to spare, it will help matters wonderfully, even up to six months of age.

The increasing popularity of gluten meal is a remarkable fact. The same may be said of gluten feed. The milk producing farmers buy immense quantities, and use less cornmeal than formerly.

John L. Harris, South Bend, Wash., thinks that the Pacific Coast hemlock will be found very suitable for butter boxes for the export trade. Page Cherry, General Dairy Freight Agent of the Baltimore Railroad, believes that cottonwood will be found suitable.

The New York Experiment Station found that in the case of five cows the first pint of milk contained only 3 per cent. of fat, while the last pint contained 6.85 per cent., and the mixed milk from the whole milking averaged 2.55 per cent. In every instance the first half contained only one-third to one-half as much fat as the last half. Similar results are reported in Connecticut, also in Indiana and New Hampshire.

The profits in dairying depend, first, on the kind of cow we start with; next is the matter of feed and attention. If there is any profit at all it is from those cows that are well bred and well fed. If the demand for good butter and cheese continues and other farm products rule at a low figure, we must devote more time to dairy matters. It is no easy job to pick up a herd of good cows at random. The safest plan is to get a few good ones, and then buy a registered bull and breed up.

Farmers complain that they cannot compete with the creamery in making butter, because the creamery is better supplied with dairy appliances. The farmer, however, can have better milk than the creamery, as he procures his supply from a herd of cows of his own breeding or selection, while the creamery must depend on the entire community for its milk. It is the care of the milk at the stable and before sending to the creamery that gives an advantage, and this is controlled by the farmer when he makes butter which is to be choice. The cow, her breeding, and her food, with cleanliness, are the main factors in making good butter.

"BACILLUS NO. 41."

Studies of Its Action in Ripening Cream.

Since November, 1893, the Connecticut Station has been actively testing the effects of "Bacillus No. 41" in producing an improvement in the flavor of butter.

"In each case there was an improvement in the butter, and the experiment was continued for three, four, five, or six weeks, until the butter maker noticed a distinct deterioration in the quality of his butter. Then a new culture was sent to the creamery, which immediately restored the quality to the butter.

"At four distinct periods the butter from the creamery was sent to an expert for rating, together with a lot of butter made from half of the same cream of the same day, but without the artificial inoculation. In every case where the butter was thus sent the butter made by the artificial culture was rated higher than the butter made without it. It was marked from 4 to 15 points, on a scale of 100, ahead of the normal butter, the improvement being chiefly in the flavor. In one case the inoculated butter was 18 points ahead of the uninoculated butter. In another case three lots were sent to the expert, one made with a culture of Bacillus No. 41, a second made with the artificial culture sold by Carl Hansen's dairy company, and a third lot by a combination of Bacillus No. 41 and Carl Hansen's ferment. The butter made from Bacillus No. 41 rated highest, 95 points, the combination next, 83 points, and Carl Hansen's lowest."

Trials at over 60 creameries in Connecticut, and in Pennsylvania, Indiana, and Iowa are also cited.

"With a single exception none of this large series of creameries has failed to report an improvement in their butter. The creamery which did not find such improvement was reported as failing to have proper care for cleanliness in its butter-making process, and the failure to find an improvement has not therefore been thought to be significant."

Some doubt was entertained as to whether the culture could be used in private dairies where the cream has accumulated for a number of days before being churned. A trial was made at a dairy which was troubled with the appearance of curds in the butter.

"The curds disappeared in the butter that was ripened by the artificial culture, and everyone to whom the butter was submitted stated that it was decidedly superior to the butter that had been made previously. The experiments were not continued in this dairy for any length of time, and the butter immediately fell off again in quality."

Two other trials in private dairies showed the butter to be slightly improved in one case and decidedly improved in another by the use of the artificial culture.

"So uniform have been the results of the use of this organism that it must be regarded now as beyond the reach of experimentation, and Bacillus No. 41 takes its rank as a species of organism whose artificial use in the ripening of cream will produce a striking improvement in the flavor of the butter. The effect of the culture upon the various grades of butter is not exactly what might have been expected, and I have been considerably surprised thereby. When the experiments were begun I had supposed it probable that the use of the artificial culture might improve a poor quality of butter, but was very doubtful whether it would have any effect, at least any advantageous effect, upon first-class butter. Experiments, however, have shown that the organism appears to be of decided value even in first-class creameries. As already mentioned, the effect of the organism appears to be to add to the butter an especially delicate aroma and taste, and this delicate aroma and taste is added equally to butter of a poor grade and medium grade, or to butter of the very highest quality. In the light of the present experiments, therefore, it appears that all grades of butter may be somewhat improved by the use of artificial cultures.

"Another matter of some interest is the fact that Bacillus No. 41 is not a milk-souring organism. The 'ripening' of cream is in many places called the 'souring' of cream, and it has been supposed by all experimenters hitherto that the souring was identical with the ripening. For this reason all of the species of bacteria which have hitherto been used in ripening cream have been acid-producing organisms. Experimenters have not thought it worth while to investigate whether or not the aroma of butter might not be due to species of organisms that do not normally sour the cream. Bacillus No. 41, while it produces a very slight acid reaction, does not sour the cream, and it belongs, therefore, to an entirely different class of organism from those hitherto used. This is especially interesting as indicating that probably the aroma of the butter is entirely distinct from the souring of the cream, and may be produced either by acid organisms or by organisms that do not produce acid. * * *

"No previous treatment of the cream is needed in order that Bacillus No. 41 may produce its appropriate results. This, of course, greatly simplifies the use of the organism, and makes it much more probable that artificial inoculation of cream for ripening may in the future become a somewhat universal process."

LONG-DISTANCE DRIVING.

How to Make the Most Out of a Horse in a Long Trip.

The most important rule for long-distance driving is to start off slowly. The roadster should have an opportunity to stretch his legs and to get his second wind before being called upon for a real effort. No matter how great the hurry, time will be gained in the end by driving the first three or four miles at a gait not exceeding six or seven miles an hour With a substantial load, or in very hot weather, the pace should not be more than five or six miles an hour. I happened once to see a pair of horses just as they finished a drive of 20 miles over a very hilly country. They had accomplished it in the excellent time of two hours and a half, and they arrived in good condition. A week later the same horses were driven by a different man over the same road in three hours and a half, and they were completely exhausted by the journey. The explanation was that the second driver had started at a great pace and kept it up for the first three or four miles, although there were some steep hills to climb. It is a more common mistake to suppose that a horse can maintain a fast gait without fatigue over a long level stretch. When the road is perfectly level the labor of drawing a vehicle, though not excessive, is absolutely continuous, so that it becomes exhausting after a few miles. On such a road the horse should be permitted to walk a little once in every two, three, or four miles, according to the weight of the carriage, the condition and ability of the animal, the weather, and other circumstances. An up-and-down road, even though the hills are steep, is far less fatiguing to the horse than a level one, besides being, as a rule, much more picturesque. At least half of the villages in the mountainous parts of New England are connected by two roads, one through the valley, and another, but seldom used, over the hills. The traveler would do well in most cases to pursue the hilly route.

Much discretion also can be exercised in choosing the good parts of the road, in taking advantage of declivities, in easing the horse where the going is heavy, or when he becomes too warm, or even when, for some reason not apparent to the driver, he seems to need a slight let-up. In short, to be a good driver, especially for long distances, a man must be sympathetic with his horse, and must understand the language of his ears, his tail, and his gait. Care should of course be taken—and a very little will suffice—to turn the horse away from stones, lest he should trip over them, and to clear them with the wheels also, lest an unpleasant jar should be given to the vehicle. There is one peculiar fact about the avoidance of stones with which no doubt all bicycle-riders are familiar. If you begin to make your calculations at some distance off, you are almost sure to miscalculate, and to hit the stone, whereas if you wait till the last moment the slightest turn of the wrist will enable you to dust your stone almost without touching it.—*Henry Childs Merwin in Harper's Magazine.*

THE ORCHARD.

Cullings.

Old fences and hedges are a constant menace to the orchard. They are the breeding places of insects and of fungi. A hedge is a good ornament when rightly taken care of, but when it is in near proximity to the orchard it may cost many times more than its value as an object of beauty.

Some farmers, who seem sensible in most things, handle their orchards as if they did not know that any trees were growing there. They plow, grow crops which impoverish the soil, or use the orchard for pasture, as if trees were no more to be considered than fence-posts. No wonder their trees become discouraged.

Between the tree rows of a young orchard there is no better crop than currants or gooseberries, two or three bushes in each interspace. After five or six years grow nothing there, as a rule, and all the time keep the soil open by frequent manuring and tillage. Then let it grow up in blue grass; it at least forms a nice bed for the fruit to fall upon.

Judge Wellhouse, the great apple grower of Kansas, sows red clover in his orchards when they come into bearing and rolls this down twice a season with a large roller on which are several knives, like the knives of a stalk cutter. The clover stand is kept up by yearly reseeding, and the fertility of the land is well cared for, so far as nitrogen and good physical condition go.

Should the pruning of an orchard be neglected for two or three years, it will not do to take out in one season all the growth that should be removed. Rather two or three years should be taken to rectify the mistake or neglect previously made. A sudden severe pruning kills many of the roots, and is sure to be followed by a very abundant and troublesome growth of suckers.

Go over the orchard frequently and know that everything is well with the trees. The possibilities of orcharding are only to be measured by the ability of the man. If there are drawbacks in the nature of soil, climate, altitude, lay of the land, etc., and no doubt such drawbacks do exist, they are only of minor importance, and to the thoroughly competent fruit-grower such obstacles are really an aid. They put a handsome premium upon special knowledge and fitness for the work of growing and marketing fruit.

Grafting Hickories.

Jackson Dawson says that he finds little trouble grafting hickories, if done under glass. "My method has been to sidegraft, using a scion with part of the second year's wood attached, binding it firmly and covering with damp sphagnum until the union has been made. The best time I have found for the operation under glass has been during February, and the plants have been kept under glass until Midsummer and wintered the first year in a cold-frame. In all genera I find certain species which may be called free stocks—that is, stocks which take grafts more readily than others. Thus, nearly all the oaks will graft readily on Quercus Robur; the birches will graft more easily on Betula alba than on others; so of the hickories. Observation has led me to believe that the best stock is the bitter nut hicoria minima. This species grows twice as rapidly as the common shag-bark hickory, and while young the cambium is quite soft. I should advise anyone who wishes to propagate hickories on a large scale to grow stock of this species in boxes not more than four inches deep. In this way all the roots can be saved, and there will be no extreme tap-root, and when shaken out of the boxes the plants are easily established in pots and ready for grafting.

If taken up in the ordinary way from the woods it requires almost two years to get them well rooted, and often the stocks die for want of roots after the graft has really taken. If grown in rich soil the stocks will be large enough to use in one or two years. I should then pot them early in the Fall, keeping them from heavy frosts and bringing them into the house about the 1st of January, and as soon as they begin to make roots I should side graft them close to the collar and plunge them in sphagnum moss, leaving the top bud of the graft out to the air. The graft ought to be well united about the last of March, when the plants should be taken from the sphagnum and set in the body of the house to finish their growth. After carrying them over the next Winter in a cold pit they could be planted out the following Spring, and the second year they could be set where they are to stay permanently.

Preventive for Apple Canker.

According to investigations by Newton B. Pierce it is concluded that Bordeaux mixture, according to the formula—Ten pounds copper sulphate, 10 pounds quick lime, and 45 gallons water—applied before the rainy season, is the best known preventive measure. Young apple trees, where liable to become infected, should be thoroughly treated; the mixture should cover the entire trunks, to prevent the spread of the canker.

How's This!

We offer One Hundred Dollars Reward for any case of Catarrh that cannot be cured by Hall's Catarrh Cure.

F. J. CHENEY & CO., Props., Toledo, O.

We, the undersigned, have known F. J. Cheney for the last 15 years, and believe him perfectly honorable in all business transactions and financially able to carry out any obligations made by their firm.

WEST & TRUAX, Wholesale Druggists, Toledo, O.
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Hall's Catarrh Cure is taken internally, acting directly upon the blood and mucous surfaces of the system. Price, 75c. per bottle. Sold by all Druggists. Testimonials free.

When writing mention this paper.

Dietz Reflector Lantern.

THERE is an all-"aroundness" about the goodness of this Lantern that is noteworthy. In fact, it has too many virtues to crowd into this space. It gives a surprising volume of light, which is rendered specially intense by the concentrating powers of the Reflector and Hood. It will not blow out, is absolutely safe, and can be used for driving darkness while you are driving horses, having a simple arrangement to attach it to any vehicle. The U. S. Life-Saving Service uses it for a patrol Lantern—as the fierce coastwise gales cannot extinguish it.

The U. S. Government buys wisely—take a hint from it, and insist on your dealer giving you the "Dietz" goods.

We make an endless variety of Lanterns, Lamps, etc. ESTABLISHED IN 1840.

R. E. DIETZ COMPANY, 60 Laight Street, New York.

Our Catalogue, a nice little one, mailed free, will further illuminate you

Sunlight for Apple Trees.

In order to produce such a crop of apples as trees sometimes do they must do a large amount of work in collecting the crude materials required and in manufacturing them into such refined products as Gravensteins, Greenings, and Baldwins. Sunlight, by its action upon its foliage, furnishes largely the power that runs the machinery of an apple tree. The amount of this power that a tree can use in a measure determines how much fruit the tree can bear.

The natural habit of the apple tree is to form a rounded top, with the branches bending low, to catch as much sunlight as possible. It is a too common practice to cut these limbs off, which may in the case of a well-grown tree represent from 400 to 800 square feet of the normal bearing surface of the top, and in this way to permanently injure the tree. It is as important for an apple tree that is to do its best work to have its top adjusted to use the light as it is for a sailing vessel to be trimmed to catch the wind.

Save the lower limbs, that increase the surface area of the top, for these, when the roots are well cared for, enlarge the bearing capacity of the tree; but thin out and when necessary shorten in the limbs, that the light may shine brighter on those that are left.

Black Walnuts in Ontario.

One of the most valuable timber trees is the black walnut. It succeeds as far north as Ontario. Five hundred black walnut seedlings, from six inches to a foot in hight, were planted in rows seven feet apart on the Ontario College farm in the Spring of 1880, 16 years ago. It was thought that they would not stand the severity of the climate at Guelph, but they have done so, and have made a very fair growth. At the present time they are quite thrifty, measure from four to seven inches in diameter, and are bearing a good crop of nuts.

TEST YOUR SIGHT.

From the reading or advertising columns of any newspaper cut out a line or two of the finest print that you can read *without* glasses at a distance of 12 to 15 inches from the eye. Mail us this cutting, inclosing 20 cents (silver), and we will mail you a sample pair of glasses as good as any you ever used, and *exactly suited to your eyes.* If you know the "number" you wear we can duplicate it. Fine goods closed out at a sacrifice for business reasons. Address,

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When writing mention this paper.

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selling the Queen Butter Maker that makes and gathers butter in 3 to 5 minutes; everybody wants a quick churn. Sells at sight; guaranteed, easily cleaned, simple, practical, great chance for agents. Hard time winner. No talk nor hard peddling. To show the machine is to sell it. The agent that makes butter in 3 min. before 8 or 10 people, is sure to sell 6 or 8 at once. Agents easily make from $12 to $30 a day. The Queen Butter Maker Co. 16 E. 3d St. Cincinnati, O.

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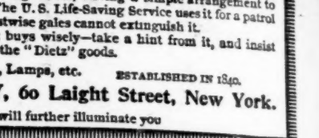

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